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GERIATRICS

GERIATRICS

A TREATISE ON THE PREVENTION AND TREATMENT OF DISEASES OF OLD AGE AND THE CARE OF THE AGED

BY
MALFORD W. THEWLIS, M.D.

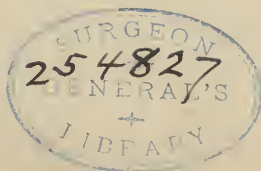
Editor, Medical Review of Reviews; Associate Editor, The Therapeutic
and Dietetic Age

WITH INTRODUCTIONS BY
A. JACOBI, M.D., LL.D.
AND
I. L. NASCHER, M.D.

SECOND EDITION, REVISED AND ENLARGED

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TO
I. L. NASCHER, M.D.

PREFACE TO SECOND EDITION

The text has been revised and several chapters have been added to the first edition, the most important of which are Electrotherapy, Opoththerapy, Senile Heart Disease, Asthma, Emphysema, Influenza, Rheumatism, Pruritus Senilis and Hepatic Cirrhosis.

Chronic diseases have minor symptoms which are observed several years before the disease becomes organic, if these symptoms could be properly interpreted at the beginning, many chronic diseases of old age could be prevented. Thus, the minor symptoms of Brightism usually appear ten or fifteen years before the disease is discovered, and a physician will seldom be wrong who studies them, they will attract his attention to the disease. We must detect nephritis, diabetes, cancer, and other diseases when they first develop if we wish to obtain the best results.

Opoththerapy is one of our most valuable aids in treating senile diseases and in preventing senile degenerations and although it was known to ancient Egyptians, it is now practically in its infancy.

I am indebted to Professor Regaud and his assistants, Doctors Cesbron, Richard, Monod, and Lacasagne for the courtesies and valuable information given me at the Institute of Radium, Paris.

That interest in Geriatrics is increasing is evidenced by the attention given to it by many medical authors. Research work will be carried on and in time there may be clinics established for the study of senile diseases, since we must acknowledge the fact that diseases of old age require as much special attention as diseases of children.

M. W. T.

PREFACE TO FIRST EDITION

In 1860, when Doctor Abraham Jacobi began his first systematic course in pediatrics, very little interest was given by the medical profession to this specialty. It was a difficult matter to convince physicians that the ailments of children required special attention and treatment and Doctor Jacobi met many discouragements before he succeeded in firmly establishing pediatrics as a special branch of medicine. As public interest in child conservation increased, medical interest in pediatrics increased, and today this is one of the most important branches of medical science.

For many years French and German physicians understood that the other extreme of life required special study and care; that the methods and measures successful in diseases in earlier life were often detrimental in the same diseases in old age; and that the natural tendency of pathologic processes was to spread, become more active, cause further disorganization, and lead to death. It seems to be as difficult to impress these truths upon American physicians today as it was difficult, half a century ago, to make physicians realize the importance and truth of pediatrics. From the time of Hippocrates, whose works contain many references to senile conditions, to this day, philosophers, scientists, and physicians have studied and written about the aged, but the first scientific treatise on diseases of old age, Floyer's *Medicina Gerocomica*, appeared in 1724. Our present knowledge of senile diseases is based upon Canstatt's *Krankheiten des Hoherem Alters und Ihre Heilung*, which ap-

peared in 1839. Since then, a number of German and French textbooks on this subject have appeared, but aside from the English translation of Charcot's lectures, given in the late sixties, and Seidel's Monograph on *Diseases of Old Age*, in Woods' *Monographs* of 1890, no important American book appeared until Nascher's textbook *Geriatrics, The Diseases of Old Age and Their Treatment* made its appearance in 1914. It is a singular fact, showing the universality of medicine, that the late Doctor Abraham Jacobi, who, fifty years before established pediatrics as a special branch of medicine, wrote the introduction to Doctor Nascher's work, the first complete textbook on the subject in the English language.

My plan in this work is to give a clinical discussion of cases, not a textbook presentation of diseases. It is really a series of monographs, following the style of some French writers, who report cases and then discuss them. In this way, the textbook style is avoided, the personal views of the writer are presented, the discussion is in great part limited to the writer's experience; therefore, a mass of statistics is omitted.

One of the most frequent questions asked about geriatrics is, "At what age does the study begin?" At a meeting of the New York Geriatric Society, the surgical aspect of the aged was discussed, and the surgeons present limited their remarks to cases over seventy years of age. This is the general impression, but it is erroneous: indeed, I had a patient thirty years of age who presented senile changes, including arteriosclerosis and calcareous degeneration of the arteries, without apparent cause. Had there been syphilis, plumbism, or some other causes, it would not have come under this head. Being apparently a case of precocious senility, it fell within the scope of geriatrics. Many persons at, or just past forty-five, present senile changes which should not appear until seventy or later.

Geriatrics includes, not only the treatment of senile diseases, but also the care of the aged, the causes of ageing, and measures for prolonging life. Many of the arteriosclerotic and other senile changes begin about the age of forty-five, and proper attention at this time would prevent their too rapid development. The study of geriatrics should then include persons of about fifty (age when the senile changes first become manifest).

With increasing interest in this subject it is not too much to expect special geriatric hospitals, laboratories, and specialists, who will devote themselves exclusively to the care of the aged.

Many of the articles in this work have appeared in the *Medical Review of Reviews*, *The American Journal of Clinical Medicine*, *Urologic and Cutaneous Review*, *New York Medical Journal*, and elsewhere. I am indebted to the x-ray department of the Boston Dispensary, and to Dr. Arial W. George, Boston, for the roentgenograms in this work. I am grateful to Doctor I. L. Nascher for his assistance in preparing this manuscript and to Doctor Horace Wilcox for valuable information on the subject given to me during the several years that I have been associated with him.

M. W. T.

114 East 54th Street
New York City

INTRODUCTION

By I. L. Nascher, M.D., New York

Three incidents in my career led to the closer study of the senile organism and the introduction of geriatrics as a special branch of medicine. During my student days, in the early eighties, an instructor took a number of students to the almshouse to see cases. An old woman hobbled up to the instructor with some trivial complaint. He afterwards told us that she was suffering from "old age." "And what could be done for her?" "Nothing." Suffering from old age and nothing could be done to relieve her suffering! Is old age, then, a disease from which those who had reached advanced life were doomed to suffer? This incident, as vivid today as it was nearly thirty-five years ago, laid the foundation for the branch of medicine to which I gave the name "Geriatrics."

In 1890 Seidel's monograph *Diseases of Old Age* appeared. It contained the keynote of the subject in the following paragraphs:

"Mistakes are made daily in the treatment of the aged and the normal mortality of advanced life is considerably increased as a result of the hitherto neglected study of the peculiarities of the senile organism." This monograph epitomized what was then known of the diseases occurring most frequently in advanced life, but it was altogether too short to serve as a handbook. It was a landmark, not a guide post. At this time there was no modern work in English on the subject, the most recent American book on Diseases of Old Age being Charcot's and Loomis' Work which appeared in 1881. This was an English translation of Charcot's lectures on gout and rheumatism, given in Paris in the late sixties, to which Doctor A. L. Loomis added a few lectures. Fothergill's *Diseases of Sedentary and Advanced Life*, 1885, was written for the layman as well as the physician, and like all such works it omitted the technical mat-

ter essential for scientific study. Seidel's monograph gave hints and suggestions which could be used as themes for investigation and development but there was still lacking something upon which the superstructure of a new branch of medicine could be built. This was furnished fifteen years later in an apparently trivial remark made by the physician of a Home for the Aged near Vienna.

In reply to my question to what he attributed the low death rate in his institution he said, "We deal with the aged inmates as aged persons just as the pediatricist deals with children." This remark amplified, gave me the basic principles of geriatrics. "Senility is a physiologic entity like childhood; not a pathologic state of maturity." "Diseases in senility are pathologic conditions in a normally degenerating body; not diseases such as occur in maturity complicated by degenerations." "The object of treatment of disease in senility is to restore the diseased organ or tissue to the state normal in senility; not to the state normal in maturity."

Upon these cardinal principles was erected the new branch of medicine. The introduction of a new specialty in the already overspecialized science of medicine was generally discouraged but a few physicians realized that there was a void in medicine, that geriatrics was a legitimate and necessary branch. Among the first of these physicians to recognize this was Malford W. Thewlis, the author of this work. Doctor Thewlis not only encouraged me in my efforts to arouse medical interest in the aged and their diseases, but became a close observer of senile conditions, did research work, published a number of valuable articles and became associate editor of the Department of Geriatrics in the *Medical Review of Reviews*. Doctor Thewlis is today one of the few recognized specialists in geriatrics in this country. Spurred by scientific interest as well as by a deep sympathy for the aged, he has given to the medical profession in this work the result of many years of study in this neglected branch of medicine.

J. H. Mascher

INTRODUCTION

By Abraham Jacobi, M.D., New York

I have been called upon to introduce another book on the diseases of advancing and advanced years. The author does not mean to start a new specialty when enlightening us about the physiology and pathology of age, but, conversely, thinks that our American literature has been rather slow in directing the attention of our physicians to the ailments of the old. Some of us may have been of the opinion that we have been quite too generous in giving consideration to real or alleged specialties, for instance, the diseases of infants and children; but there is no doubt that certain parts of the maladies of advanced age have not been taught or studied to their full merit.

Now with "infancy," "childhood," or "puberty" we connect a certain number of years and anatomic and physiologic alterations which are readily recognized, but in later life there is no change known by a certain number of years or changes recognizable as an epoch. Changes of bones of the same character may occur about any age without indicating a certain period of life. A "*malum coxæ senile*," may not mean exactly the seventh or fifth or fourth decade. Atheromatosis and sclerosis do not mean a certain time of life which may be counted by years or named "youth" or "age" or "maturity." "Age" may reach a man in early years or in retarded periods. That is why from time to time more books or even better books may be written or studied on "age" or "old age"; these titles may mean different objects or conditions. Changes of the heart muscle or the anatomy of the blood vessels may be the same at twenty-five which we report at fifty or eighty. Respiratory variations, chronic bronchitis, or emphysema will cause the same manifestations and indicate the same therapy at twenty as at seventy-five without the diagnosis of "old age"; cataract or prostatic disease, cystitis or neoplasm need not mean a definite

advanced period of life. A "sepsis," which we diagnosticate so readily, or "neuritis," which we attribute to the old so often, must not be limited to individual epochs. Even a diverticulum does not wait for individual local changes or strictures; for at any age it may be met with and accompanied by dangerous symptoms.

Maybe the student will do well to be prepared for certain changes in the course of a malady when his patient is aged; collapse is frequent though a fever is not marked. At that period in a feverish affection the temperature may be low. The practitioner must not forget that the slovenly way of taking the temperature of the body in the axilla or the mouth in a pneumonia will never do when the rectum (or occasionally the vagina) ought to be the only reliable access. Particularly is this important when the patient is a male. Infections usually turn readily to paralysis. Cerebral affections of the aged are liable to be fatal. Local symptoms about the lungs are sometimes quite few with little pain, little dullness and insufficient auscultatory changes.

In the practice among the old, or the prematurely old, some symptoms should always be looked for, though they are rare. Such are chills, or pain in gout, or polyuria in diabetes. Some must be feared though they are rare, for instance, affections of the tonsils, or diphtheria, or maladies connected with the spleen. Some must be apprehended because they are frequent and fatal, such as bronchitis, which is apt to relapse and be complicated with pneumonia either sclerotic or catarrhal; renal disease, which is a frequent cause of death; influenza, which kills many; parenchymatous tumors or those complicated with concretions, or with pus, or with erysipelas.

Tuberculosis is not at all rare in the aged. Tuberculous ulceration of the intestines is frequent. Tuberculous pericarditis, meningitis, osteitis, and arthritis are not infrequent. Pulmonary tuberculosis has more of a fibrous than purulent character; the chronic form may last many years, while the general condition of the patient is fair. The temperature is often quite low and should be taken in the rectum. Hemorrhages are scarce, particularly in kidneys and the prostate.

Cancer is not very frequent in the aged; more so about the

middle years. It is liable to destroy life before it reaches advanced age; that is why it cannot be called a disease of the old. The question of the frequency of carcinoma is doubtful so long as its diagnosis may be questionable. Indeed we make more positive diagnoses of cancer than formerly in intestines, gall bladder, thyroid and prostate, and discriminate more correctly between sarcoma and carcinoma. Altogether the influence of trauma—for instance, phimosis, calculus, fistula, flexure, or lupus—on the early development of cancer is not great.

Modern therapy may also have its influence on statistical statements. Roentgenotherapy has cured some carcinomata, and caused many. Radiotherapy has cured skin cancer in many instances; and the treatment of carcinoma with methyl thionin hydrochloride has proved successful at least in retarding the development of cancer in hundreds of my cases (Jour. Am. Med. Assn., 1906).

My readers will feel sure that I am much interested in the subjects which form the studies of the author. My fragmentary remarks were to introduce a few of the schemes he means to teach us. I know he will succeed.

A. J. J. J.

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GERIATRICS

CHAPTER I

GERIATRICS

Geriatrics is the branch of medicine dealing with old age. That the aged require special care and treatment was recognized by Hippocrates, the father of medicine, twenty-three centuries ago. That they require special study has only recently been recognized and even today a large proportion of the medical profession ignores the study of the senile organism.

Geriatrics is based upon three fundamental principles: (1) that senility is a physiologic entity like childhood and not a pathologic state of maturity; (2) that disease in senility is a pathologic condition in a normally degenerating organ or tissue and not a disease such as we find in maturity, complicated by degenerations; (3) that the object of treatment in senility should be to restore the diseased organ or tissue to the state normal to senility and not a restoration to the condition normal in maturity. The correct interpretation of senile pathology (principle 2) is impossible without a knowledge of the normal senile anatomic and physiologic changes (principle 1), and the proper treatment and care of the aged (principle 3) is impossible without a knowledge of senile pathology.

Anatomic changes, called senile degenerations, occur in every organ and tissue of the body. The essential change is a waste of tissue which is either not repaired at all or is replaced by tissue of a different character.

In every case where the waste is repaired by other tissue the new tissue is of a lower order, requiring less blood supply and incapable of doing the work of the wasted tissue. Wasted brain and nervous tissue is not regenerated, but some change occurs in the character of this tissue in old age. The senile brain is shrunken, denser, and contains more fluid and less fat. Nerve fibers are thinner and the nerve cells are atrophied. In some cases the wasted muscular tissue is replaced by fat, in some cases by fibrous tissues and in others the waste is not atoned for. Muscles actively employed usually waste, but the most active of all muscles, the myocardium, generally undergoes fibrosis. In brown atrophy, the cardiac muscle undergoes the same change that occurs in other solid organs in old age, but this form of senile cardiac degeneration is rare. Inactive muscles usually undergo fatty degeneration.

In bone the organic matter wastes, leaving an excess of mineral matter and causing the bone to become more brittle. The waste of the organic matter in the heads of long bones produces a spongy condition, or osteoporosis. Bone marrow becomes harder, denser, and whiter and contains more fat than in young persons. Cartilage either wastes through insufficient repair, becomes fibrillated and wastes through attrition, or becomes fibrous or osseous. Ligaments and tendons waste, contract and become stiff and hard. The synovial sacs become dry and the sac-covering dry and thick. These changes in the structure of the joint cause a stiffening with diminished motility—a condition designated as “arthrosclerosis.”

The skin becomes dry and thin, it is darker where it has been much exposed to sunlight and owing to the waste of connective tissue it becomes loose, and falls into folds. These folds are especially marked where there has been a waste of fat, as on the forehead, neck,



Fig. 1. Roentgenogram of wrist of a woman, aged 65 showing atrophy of the cartilages, making the bones very close to each other. This plate also shows rarefaction of the ends of the metacarpal bones.



Fig. 2. Roentgenogram of ankle of a man, aged 70, showing rarefaction of the bones, atrophy of the cartilages making the space between the tarsal bones much less than in younger individuals. There is also a penciling of the outlines of the bones, a characteristic of old age.

etc. The hair becomes gray and thin, with an occasional excessive growth in unusual places as on the eyebrows, in the ears and nose of men, and on the upper lip and chin of women. The changes in the hollow organs and tubes consist of atrophy of the muscular fibers with consequent dilatation of the organ or tube, and where glands are embedded in the walls as in the stomach and intestines, they atrophy. In solid organs, as the kidneys, liver, pancreas, and spleen, the tissue cells atrophy and there is a proliferation of connective tissue fibers constricting the organ, making it smaller and denser. The spleen is thus often reduced to nearly half its usual size. The smaller glands atrophy and their secretions are diminished. In a few instances organs and tissues do not follow the usual course. The prostate gland is usually enlarged through excessive proliferation of fibrous connective tissue. The ureters undergo fibrosis and become stiff and hard and the blood vessels become harder through waste of muscular fibers and their replacement by fibrous tissue. The heart is usually hypertrophied, but this is a compensatory and not a degenerative condition. The sudoriparous glands atrophy, but in some locations as in the axilla, in the groin, etc., there is excessive perspiration which has a fetid odor. In the lungs, the constant inhalation of dust produces pneumokoniosis and the waste of tissue causes a thinning and later complete waste of the walls of the alveoli, air cells coalesce and emphysema is produced. The blood changes so far recognized are, diminished amount, increased viscosity and density and increased hemoglobin content.

As a result of the anatomic changes, the functions of the organs and tissues are altered, but the functional changes do not always correspond to the anatomic changes, owing to the hardening of the blood vessels and their lessened elasticity. The amount of blood car-

ried to all parts of the organism, especially to the parts supplied by terminal vessels, is lessened and the organs and tissues supplied by these terminal vessels are insufficiently nourished. Neither the character nor the extent of the physiologic changes gives any indication of the extent of the histologic changes in the functioning organs. Very little of the spleen substance is left in advanced life and the character of the bone marrow is greatly altered, yet there is apparently no change in the number or character of leucocytes. The composition of the urine shows little alteration in the aged though the senile kidney is extensively changed. On the other hand, physical debility is usually far greater than can be explained by the wasted muscles or the anatomic changes that can be recognized in the nerves or nerve terminals.

The pronounced physiologic functional changes are lessened activity, altered activity, and loss of the harmonious interrelation between associated functions. The circulation is maintained with difficulty as the vessels have lost their elasticity and the compensatory increased activity of the heart is expended in the larger vessels and is lost in the smaller peripheral arteries. Owing to the atrophy of the muscular fibers of the veins and the consequent dilatation and loss of tonicity of the veins, the return circulation is impaired and the general circulation weakened. At the same time the tissues involved in the nervous system degenerate and nerve control is affected. As a result of the nervous and circulatory changes, organs and tissues are insufficiently nourished, they degenerate, their functions are weakened, and in some cases altered while the harmonious interaction of functions is broken. The respiratory capacity is diminished, the amount of air inhaled is insufficient to completely oxygenate the blood, the carrying capacity of the blood, the nutrition of the organs and tissues are lessened, and waste increased.

The blood is now incapable of completely repairing the lung tissue and consequently lung degeneration is hastened, this still further impairs the oxygenating power of the lungs. In like manner vicious circles are created throughout the organism. The muscular fibers of the rectum atrophy, permitting a dilatation of the lower bowel. This allows a larger amount of fecal matter to accumulate in the rectum, and owing to the atony caused by the waste of muscular fibers, a larger amount accumulates than the normal bowel can hold. The bowel is still further dilated, the weakened muscular fibers still further stretched and further waste and atony ensues with greater distention. Prolonged retention of feces with consequent decomposition and absorption of toxins produces intestinal toxemia with its train of symptoms and interwoven vicious circles.

Organs and tissues being in a process of degeneration and their functions impaired in the aged, when they become diseased, the pathologic and the functional changes are different from the changes that occur in the same disease in earlier life. Some diseases are peculiar to the senile organism, others are so greatly modified that they are hardly recognizable in the altered symptoms and signs. In Nascher's classification of the diseases of advanced life, the diseases are divided into five groups, primary senile diseases, secondary senile diseases, preferential diseases of old age, modified diseases of old age and diseases uninfluenced by old age or rare in old age. In the first group are defects in the normal senile processes or functions. In the second group are diseases resulting from the senile changes. Thus, cerebral arteriosclerosis belongs to the first group, while rupture of the sclerosed cerebral vessels, causing apoplexy, belongs to the second group. The preferential diseases are those which occur most frequently in advanced life but may occur earlier. Such diseases as paralysis agitans, dia-

betes, gout, arthritis deformans, cancer, etc., belong to this group. The fourth group contains most of the diseases which may occur at any time of life.

Owing to the altered anatomic structures and relations and altered functions in old age, pathologic processes affect these structures, relations and functions differently and the diseases are modified in character and in their symptoms and signs. In the last group are diseases such as the infectious diseases of early life and diseases which do not differ materially at any period of life. The treatment of disease in the aged must be based upon the third principle; restoration to the norm of senility, not to the norm of maturity. It is folly to attempt to convert diseased degenerating tissue of advanced life to the state normal in earlier life. Yet we frequently find physicians attempting to cure senile arteriosclerosis and proclaiming a cure when they have succeeded in reducing the blood pressure temporarily. Through drugs and other means they will stimulate functions and congratulate themselves that they have caused rejuvenation, when in fact the temporary stimulation will be followed by a reaction in which degeneration proceeds more rapidly. Drugs and other therapeutic measures do not act upon the degenerated tissues in the same manner as they do upon the healthy or diseased tissues of maturity. Doses are reduced without rule or system when most drugs must be given in increased doses. Drugs are given which are not assimilated or which produce in the senile organism more pronounced secondary effects than in earlier life. Inability to recognize these factors in the treatment of disease in senility is another cause of frequent failure to cure senile patients.

CHAPTER II

NEGLECT OF THE AGED

That the aged are neglected is very evident. There are hundreds of books, journals, and societies devoted to the welfare of the child and their number is increasing year by year. Aside from the small organizations interested in particular homes for the aged and one small medical society interested in senile diseases, there is no general body interested in the welfare of the aged. There is not a journal in the world devoted to the aged, while the few books dealing with the conservation of the aged are either medical works concerned with senile diseases or scientific works too technical for popular use.

The layman understands that the food suitable for the young, active individual is not suitable for the aged person, yet he looks in vain through the standard works on feeding and food for dietetic rules or formulæ for the aged. Neither can the physician who is not familiar with the changes in the digestive organs and in their functions, formulate a suitable dietary. This also applies to the clothing, sleep, exercise, recreations and to every other factor in the lives of aged individuals.

A large proportion of the medical profession is still ignorant of the peculiarities of the senile organism and physicians still treat aged persons as they do younger ones, perhaps diminishing doses of drugs, without system or reason. When the patient dies under such treatment the physician eases his conscience and satisfies the family by ascribing death to "old age." But the conscientious physician who is imbued with the scientific spirit is not satisfied with this diagnosis. Old age is not

a disease, and ordinarily it is not a cause of death. Death from old age is conceivable. Sometimes there will be a gradual degeneration of all the organs and tissues and their functions will become more and more impaired, cerebral activity and nervous and muscular irritability will gradually diminish to the point of complete extinction. This is, however, exceedingly rare. It is far rarer than vital statistics indicate since many deaths ascribed to old age are due to disease which the physician did not recognize, or, finding symptoms and signs which he could not interpret, he resorted to the diagnostic placebo, "old age."

We can readily account for the public neglect of the aged. Human sympathy is universal in its scope, but not in its application. Instinctively or subconsciously, economic values, social relations, the esthetic sense and other factors influence the directions in which sympathy is applied. The aged become economically worthless and must remain so, while the child has a prospective and ever-increasing economic value. Optimistic philosophers of all ages from Cicero to Jean Finot describe old age as being beautiful, but no philosopher has ever declared that the aged themselves were beautiful. From the purely esthetic standpoint the aged are disagreeable, often repulsive, and fail to arouse sympathy as long as they are not altogether helpless or in distress; from them may emanate disagreeable odors, offensive actions; they may be justly accused of peevishness, selfishness, wilfulness, suspicion, etc. One or another of these repelling forces exists in almost every case and overcomes sympathy and interest. We find, consequently, that there is a universal tendency to shift the responsibility and the care of the aged upon others, usually upon the community at large. Individuals usually take an interest in their own, though this interest is often more duti-

ful than filial but sympathy for the aged, which is essential to their welfare, is altogether lacking.

Medical neglect of the aged is as general as is the public neglect. Here and there some physician thoroughly imbued with the principles of the medical profession, sympathy and science, has made a study of the aged in health and in disease, has recognized the great difference between maturity and senility and has devoted himself to the care of the aged. But the great mass of the medical profession is still indifferent to their welfare. This is due partly to the causes which lead to the public neglect of the aged and partly to other factors. There is nothing spectacular in geriatrics, it is not so remunerative a specialty as other branches of medicine, and the physician's endeavors must end in ultimate failure. Medical knowledge has increased to such an extent during the last half century that subdivisions and specialization have become necessary and the physician of today must devote himself to a specialty if he wants to keep up with the spirit of the times. And it is but natural that the physician will select a specialty which is either spectacular, remunerative or promising of success. There is another reason why geriatrics is still unpopular. So little has been done in this field and so little has been written about it that the physician taking it up will be obliged to do considerable original observation and research work. There are few physicians who are willing to devote their time and mental efforts to this study when other fields giving greater assurance of success are open to them, and yet there are problems connected with geriatrics, which, if solved, would make this branch perhaps as spectacular, as remunerative and as successful in immediate results as any other branch of medicine. May there not be causes of ageing which can be controlled or minimized, thereby prolonging life? May

there not be some means for stimulating the mental and physical organism thereby causing a rejuvenation, without the reaction which hastens degeneration? Can we not lessen and relieve the many little aches and pains which the aged bear with resignation since they have been taught that these are inevitable results of advanced life?

Here are a few problems well worth the physician's efforts, problems which if solved would revolutionize the medical care of the aged, as the solution of the etiologic problem of tuberculosis revolutionized the whole science of medicine. Within the memory of old physicians pediatrics was looked upon as a medical fad. To-day it is one of the most important branches of medicine and the close study of this branch has resulted in the restoration to health and the saving of thousands of young lives. The study of geriatrics gives the same promise in regard to the aged. It requires only the thoughtful consideration of the underlying principles of geriatrics to convince physicians that it is worth while and that in our present attitude toward the aged and their ailments we are deliberately neglecting our duty.

CHAPTER III

THE VALUE OF OLD AGE

To grow old gracefully is an art which is difficult to acquire, especially in the present day when we are apt to say that the old should make room for the young. It is very common to look upon a man of sixty as too old to be of use in the world, and the present conditions of society really do not offer him encouragements to master his old age.

A careful analysis, however, will show us that some of the greatest works in art, music, poetry, and science, have been accomplished by men past sixty,—even past eighty the list is a long one—and without these master minds, the world today would not be as rich as it is.

To “remain in the harness” in ripe old age has been the motto of many of these aged persons. To keep at work in an interesting occupation is in reality the keynote of obtaining the best there is in old age.

A French philosopher said that a man should keep at his work as though immortal, even if he should know that his death would come the next day.. Goethe: “When a man is old he must do more than when he is young.” Emerson: “The high prize of life, the crowning fortune of a man is to be born with a bias to some pursuit, which finds him employment and happiness.”

It seems, then, that the accomplishments of these old persons depend upon their ability to “stay in the harness.” Many an old man is living today who owes his life to occupation. Many old men are our resources of knowledge; when a young lawyer needs advice he goes to an older lawyer; a young physician consults an older one; the old and young work side by side and each profits

from the presence of the other. It is incorrect to say that the old should step aside in order to give young men a chance.

Some men seem to gain in energy as they grow older. Dandolo, when past ninety and utterly blind, stormed Constantinople. Titian was painting his finest pictures before he died in his hundredth year. Brougham was a strong debater at eighty, and Lyndhurst, when over ninety, spoke in the House of Lords.

Goethe worked until he was past eighty years, his intellect remained intact and he retained his great energy. Some of his best poems were written when he had passed his seventy-fifth birthday.

Herbert Spencer died "in the harness" at the age of eighty-three. Several years before his death he had a nervous breakdown and practically became an invalid. He worked hard and became master of his affliction. At times he could only write a few paragraphs a day, but little by little his great works were written. He was a great sufferer for over forty years yet he produced some of his best works during this time.

Sir Joseph Hooker, of England, the great botanist, did a great deal of work after he became an octogenarian. Macaulay was forty-eight when he issued the first and second volumes of his *History of England*, but the third and fourth volumes did not appear until he was fifty-five years of age.

Darwin did not establish his reputation until he had passed fifty. He wrote *Descent of Man* at the age of sixty-two. Humboldt's greatest works were produced after three-score years, and one of his most important works was not completed until he was eighty-nine years old.

Carlyle refers to the slow development of a rich nature. He did not publish any of his great works before he was forty years old. The first two volumes of *Frederick the*

Great appeared when he was sixty-three; two more when sixty-seven and the last two when he was sixty-nine.

In many instances it seems that old age produces changes which increase a man's power of energy. Oliver Wendell Holmes said that he found he could learn twice as easily as in his earlier days, the reason being that he had an increased power of concentration. Longfellow at forty-eight wrote *Hiawatha*. After that his writings were prolific. At sixty-eight years of age he wrote *Morituri Salutamus* which was written for the fiftieth anniversary of his graduation from Bowdoin College. Washington Irving was sixty-six when he wrote the life of Oliver Goldsmith. His *Life of Washington* in five volumes was completed only during the year of his death at seventy-six years of age. At seventy-five, Dr. S. Weir Mitchell was still in active practice and his literary labors were in evidence.

Thomas H. Benton, Senator from Missouri when seventy-two years old, was defeated for his sixth term. He started a new life and began a political review of all parties from the time of John Quincy Adams to Franklin Pierce. Theodore Roosevelt, in his *Biography of Benton*, says: "Benton grew in character to the very last. He made better speeches and was better able to face new problems when past three-score and ten than in his early youth or middle age."

James Russell Lowell was once passing a great building in London which bore the inscription "Home for Incurable Children," whereupon he said to a friend, "They'll take me there some day."

It has often been said that Oliver Wendell Holmes never had an unhappy mood. He trained himself to grow old gracefully and was extremely optimistic; his whole object in life was to make the world better.

Edward Everett Hale published his *Memories* when he was approaching eighty years of age; at eighty-two he

was elected Chaplain to the United States Senate. Like Emerson's, his home sheltered many of the world's literary men, who received great stimulation and pleasure in his company.

In the later days our history was in part shaped by the newspapers which had at their heads men ripe in age and experience. Much could be said of Horace Greeley of the *Tribune*, Charles A. Dana of the *Sun*, Samuel Bowles of the *Springfield Republican*, and William Cullen Bryant of the *Evening Post*. These editors did a great deal of their best work in their advancing years and left a press standard that makes our newspapers substantial today.

Gladstone became famous after the age of sixty and was elected Prime Minister four times, still retaining the office at the age of eighty-two. There was apparently no end to his capacity for work, and it has been said of him that "no pressure of work made him fussy or fidgety, nor could any one remember to have seen him in a hurry." Gladstone lived a simple life and was said to have, like Horace Fletcher, masticated his food many times before swallowing. He walked a great deal and even after his seventieth year continued this habit. In his eighty-ninth year, before his death, he was as fervent as when thirty and possessed a keen mentality. It was said that he was "the most colossal character on the globe."

Emerson said that men old in years and intellect composed the greatest governments. He tells of the blind Dandolo who became chief magistrate of Venice at eighty-four; stormed and captured Constantinople at ninety-four and after the revolt was again victorious and elected at the age of ninety-six to the throne of the Eastern Empire, which he declined, and died at the age of ninety-seven.

Daniel Huntington, famous artist who made fine por-

traits of Lincoln, Grant, Agassiz, Bryant, etc., at the age of eighty-seven was still very active in his excellent work.

King Christian of Denmark at eighty-six ruled his kingdom with a strong hand. Admiral George Dewey was sixty-one when he won the honors at Manila Bay. John Hay was sixty-four before he became world renowned as a diplomat.

William Cullen Bryant, the famous American poet and journalist, remained "in the harness" until his death at the age of eighty-nine. Because of his remarkable activities few realized his advanced age and his death was a great shock to the world. His theory of growing young gracefully is well worth reading:

"I have reached a pretty advanced period of life—seventy-eight years and four months—without the usual infirmity of old age, and with my strength, activity, and bodily faculties generally in pretty good preservation. How far this is the effect of my way of life, adopted long ago, and steadily adhered to, is perhaps uncertain. I rise early—at this time of year about half-past five; in summer, half an hour, or even an hour, earlier. I immediately, with very little incumbrance of clothing, begin a series of exercises, for the most part designed to expand the chest, and at the same time call into action all the muscles and articulations of the body. These are performed with dumb-bells, the very lightest, covered with flannel; with a pole, a horizontal bar, and a light chair swung around my head.

"After a full hour, and sometimes more, passed in this manner, I bathe from head to foot. When at my place in the country, I sometimes shorten my exercise in the chamber, and going out, occupy myself for half an hour or more in some work that requires brisk exercise. After my bath, if breakfast be not ready, I sit down to my studies until I am called. My breakfast is a simple

one—hominy and milk, or in place of hominy, brown bread, or oatmeal, or wheaten grits, and in season, baked sweet apples. Tea or coffee I never touch at any time. At breakfast, I often take fruit, either in its natural state or freshly stewed. After breakfast I occupy myself for a while with my studies, and then, when in town, I walk down to the office of the *Evening Post* nearly three miles distant, and after about three hours, return, always walking, whatever be the weather or the state of the streets. In the country I am engaged in my literary tasks till a feeling of weariness drives me out into the open air, and go upon my farm or into the garden and prune the trees or perform some other work about them which they need, and then go back to my books.

“At the meal which is called tea, I take only a little bread and butter with fruit. In town where I dine later, I take but two meals a day. Fruit makes a considerable part of my diet. My drink is water.

“I never meddle with tobacco, except to quarrel with its use. That I may rise early, I, of course, go to bed early; in town as early as ten; in the country somewhat earlier. For many years I have avoided, in the evening, every kind of literary occupation which tasks the faculties, such as composition, even to the writing of letters, for the reason that it excites my nervous system and prevents sound sleep. I abominate all drugs and narcotics, and have always carefully avoided everything which spurs Nature to exertions which it would not otherwise make. Even with my food, I do not take the usual condiments, such as pepper, and the like.”

Bryant did his best work after three-score and ten. He was a wonderful orator besides being a great author.

Famous women who have accomplished some of their best works in their old age would make a long list. Mrs. Russell Sage, born in 1828, showed great fitness and wisdom in her philanthropic work. Mrs. Doremus,

mother of Professor R. Ogden Doremus, at an advanced age, spent her evenings in charitable and philanthropic labors. Dr. Elizabeth Blackwell, born in 1821, with her sister Emily, founded the Women's Medical College. Rev. Antoinette Louis Brown Blackwell, a leading Unitarian preacher, in her contributions showed that her intellect increased instead of decreased with her advancing years. Her whole life past seventy has been spent in useful work of splendid value.

Mrs. Osler, mother of Sir William Osler, died at a very advanced age. She was a woman of great energy, force of character, and retained her faculties to the end of an exceedingly long life. Clara Barton, born in 1830, the head of the Red Cross from 1881 to 1900, did a great deal of work in her advancing years.

Thus far I have given consideration, in part, to famous persons of past years. I will devote the remainder of the chapter to famous old people who are living or who died recently.

Doctor Abraham Jacobi, the Nestor of American Medicine, was in active practice past the age of eighty-seven after having practiced over sixty-three years. He remained exceedingly keen and his advice was sought by many. His memory was remarkable and he was able to remember names and dates with the greatest accuracy. His life was one of very hard labor and retained to the last the great determination that had been his characteristic.

Doctor Stephen Smith, who died recently, was nearly one hundred years old. He was an active figure in life until a few years before his death.

Doctor Beverley Robinson, at the age of 78, is active and writes on various medical subjects.

Doctor William W. Keen, a major in the Medical Reserve of the United States Army at eighty, is one of the greatest surgeons of the world and his system of Sur-

gery was written when he was past the age of seventy.

Joseph H. Choate did a great deal of his best work past his seventieth year. Chauncey Depew, active at the age of eighty-six, has been a leading figure in life. Cardinal Gibbons at the age of eighty-four was one of the great men of the world.

Frank B. Sanborn died at the age of eighty-six. This famous journalist and biographer of John Brown was active to the last. At the age of eighty-two he wrote the *Final Life of Thoreau*. His greatest writings were accomplished when past the age of sixty.

Charles W. Eliot at eighty-six delivers lectures on educational and scientific subjects. He has done a great deal since sixty and at the age of eighty was awarded the first gold medal by the American Academy of Arts and Letters as a recognition of "special distinction."

John Morley, past eighty, probably writes the best English of any living man, at the age of sixty-five he wrote his *Life of Gladstone*. He has been in political activities since past his fifty-fifth year and at the age of sixty-six was appointed Secretary of State for India.

Sir Robert Laird Borden, Sir Wilfred Laurier, George Brandes, the Danish author, Herbert H. Asquith, Viscount Bryce, General Joffre, Washington Gladden, Lyman Abbott, William Dean Howells, Moorfield Storey, John Burroughs, Henry Cabot Lodge, James B. Angell, Andrew Carnegie, Simeon E. Baldwin, John W. Foster, George F. Edmunds and many others accomplished a great deal in the latter part of their lives.

Elihu Root is a figure in American diplomatic circles and was president of the New York Bar Association at the age of sixty-four. At the age of seventy-two he was sent to Russia by our government on a mission to advise Russia as to the best method of safeguarding the revolution.

Georges Clemenceau, for many years one of the most

forceful figures in French public life, returned to active work for the government during the War. He is called "The Tiger" and his methods in dealing with labor troubles have been very drastic. Clemenceau is eighty years of age and he is still very active, as shown by his tour of the United States. Some time ago he was wounded in the chest by a man who attempted to assassinate him and the bullet has not been removed.

Auguste Rodin, famous sculptor, at seventy-seven, was still too young to die. Art and life needed the supreme inspiration of his genius.

Doctor W. E. Crockett, of Boston, at eighty-five years, is a worthy physician and athlete. For many years he has astonished those who know him by his remarkable feats of strength. According to Dr. Crockett, every man at eighty can be an athlete if he cares to. Some of the feats he has accomplished during the past few years are the following: Swam across Boston bay; taking a dip at L street in midwinter; walked twenty-five miles in a little more than six hours; put up a thirty-pound dumb-bell 385 times; stands with arms outstretched horizontally for half an hour. Doctor Crockett is practically a vegetarian, very little meat entering into his diet. Most men, he says, dig their graves with their teeth.

We have no better example today of the value of old age than in the life of our greatest inventor, Thomas A. Edison. At the age of seventy, during the Great War, he designed, built and operated several benzol plants and was made chairman of the Naval Advisory Board. Even though he is deaf, he conducted the meetings of the board, and it is said, by a secret telegraphic code given him by his assistant, of a finger tapping on his knee beneath the table, enabled him to follow each word spoken at the meetings.

He has a great capacity for work but has not worked in order that he may at some time retire and live without

working. His greatest pleasure in life is work and he does not look forward to a time when he can rest. He is one of the most joyous men in the world and failures and disappointments he has taken as a part of his daily work. When his laboratory burned to the ground and he lost many valuable things, he was not disturbed, but the next day began the reconstruction of his plant.

When he is exhausted from work he will tell a funny story and have a good laugh. He keeps an organ in his library on which he has taught himself to play a few of his favorite airs and after these few moments of diversion he is ready to resume his work.

The object of this chapter on the value of old age is not, however, to review the work of old persons but to show that old age is more beautiful and fruitful than we ordinarily think. An inference could be drawn from these examples that the riper the mind, the more able it is to produce things of value. A young man may have more energy for production, but he has not had the benefit of the years of experience that those of advanced age have. The purpose of this monograph is to stimulate physicians to look upon old age as a thing worth acquiring and to stimulate the aged to carry on their work.

Many old persons have given years of thought to some subject yet it has not been developed because they lacked encouragement. At the age of eighty, many men have not the determination to bring out a book, yet with assistance this could be accomplished and the world might be richer for it.

The Lesson From These Masters

On first thought a person might not realize the application of these examples to a geriatric study. It is a very important lesson, however, because it illustrates not only the great accomplishments of men in their old age,

but brings out what I believe is the most important secret of geriatrics, that is, keep the aged at work.

“Staying in the harness” is the real secret of bringing about the best results from aged minds. Psychologically, too, “staying in the harness” keeps their minds from lingering on the senile death warrant “old age,” and the responsibility of work helps them beyond measure.

Attention to the aged, appreciation of their accomplishments, has a wonderful effect upon them. It stimulates them to “keep at the wheel” and give out from their store of experience something that will make the world better.

We all know the extreme comfort there is in seeking counsel from older physicians, lawyers and other men with years of thought stored in their brains, in being able to get from them something that will make our daily life productive of better results.

Truly old age is sweet in a great many instances and if we give the aged more attention and stimulate them to greater activities we will be richer in many ways.

CHAPTER IV

THE CARE OF THE AGED

I will devote this chapter to the hygiene of advanced life and include in it attention to the skin and to the simpler things that constitute important details for the old person. Self-preservation is the first law of nature and almost every one desires to prolong his life. Metchnikoff said that the Bulgarians lived to be 150 years of age and attributed it to the use of lactic acid bacilli in the milk. We have tried this in this country but we find that people are dying every day. In fact, Metchnikoff himself died at an age of about seventy. There are many other things that enter into longevity, among them being environment. The modern method of living, the hustling and noise of a busy world, the telephone, in fact modern business tends to hasten waste in every way. If the Bulgarians lived an American life, they would probably die younger. The habits of life and the influence of external factors do a great deal more to determine a man's existence than anything else. Regular habits of living are essential to the well-being of old people. Few aged men enjoy the slight benefits to be derived from changing their mode of living, and a change in their habits may bring disaster to them.

Old persons are very susceptible to atmospheric influences. The sources of their own temperature are diminished and the blood supply to the skin being poor, they become very sensitive to barometric changes. In old age the change in tissue is waste without sufficient or appropriate repair. Most old people have cold hands and feet and in general they are obliged to wear warmer

clothing than younger persons. Flannel or woolen materials may be worn with advantage three-fourths of the year if the person is susceptible to cold. The aged frequently suffer from the cold at night and if this is distressing to them, they should have an electric pad, or a stone, which has been heated, upon which they can rest their feet.

Quetelet in a table drawn of over 400,000 cases found that the greatest number of deaths in persons past sixty occurred in the colder months, December, January and February. The aged should be especially careful in winter and any slight infection should be promptly taken care of by a physician. If the patient is able to travel, a winter in the South is often beneficial. When the most opulent of the Romans grew old they were sent to Naples.

Proper care of the skin is essential. Regular baths and massage are necessary. A tepid bath is excellent in its effect. After the bath, friction may be given either with the naked hand, flannel or with a flesh-brush and should be continued for one-half hour.

I have a patient, a man, aged eighty-six, who takes a Turkish bath once a week. He says it revives him and it apparently has some effect in relieving bronchial congestion.

Exercise is one of our best methods of preventing intestinal toxemia in the aged and in a great many cases will relieve it. An old man gives up his work and sits all day in a warm house, the lack of exercise in itself will cause many symptoms. Many times I have forced old persons to walk and busy themselves in their homes and when possible, advised them to do something involving a little responsibility, such as gardening or taking care of an estate. The best time for walking and other exercise is after breakfast, and short periods should be selected as the aged easily get fatigued if they do one

thing too long. After luncheon a short stroll will ward off sleepiness.

It is difficult to say how much sleep an aged person requires because each one is a rule unto himself. In general the aged do not require as much sleep as younger persons, they are apt to retire early at night and arise early in the morning. In many instances eight hours' sleep is sufficient, and many require even less.

The aged declare that they have not slept in three, four or five nights. A woman told me that she had not slept in five nights, but I had occasion to see her one night and when I arrived she was asleep. The noise of my entering the room caused her to awaken and when she saw me she demanded a hypodermic of morphine and denied that she had been sleeping. Many physicians have been deceived into giving morphine for this condition of apparent sleeplessness, but if the cases were carefully analyzed, physicians would probably find that many old patients fall asleep in a chair during the day and when they retire at night, naturally, cannot sleep. In cases of this kind I usually prescribe a placebo and exercise, especially after meals, and perhaps give them a glass of wine upon retiring. A little milk with whiskey at bedtime may be prescribed and it may be well to have a few crackers and a little milk at the bedside to be taken on waking in the middle of the night if they find that they cannot sleep again.

Sometimes intestinal toxemia will cause irritability and sleeplessness. In these cases a good cathartic is the best soporific that can be administered. Tobacco does but little, if any, harm to the aged and no matter what amount they have used for several years it would be bad judgment to change this habit. Many old persons awake in the middle of the night, to whom a pipe is the best nerve sedative they can have. I know persons who give old men presents of tobacco at Christmas

and I believe they appreciate it more than they would gold.

A great deal depends upon the care of the skin in the aged. The normal skin of senility is wasted and the excretions are lacking. It is usually very difficult to find an old person who perspires. On the other hand, there may be an excessive perspiration which is very disagreeable, especially at night. To check this excretion of the skin is a serious matter in the aged as the checking of excretions causes the blood to be forced from the surface of the body to the respiratory, occasionally to the digestive and urinary organs, causing congestion of these internal organs.

If the excretions of the skin become suddenly checked, it would be advisable to give the aged person a warm bath. He should take warm milk or tea and should have an electric pad, or a hot water bottle, to maintain heat. Excessive perspiration is at times due to nephritis and as it is a compensatory symptom, active interference should be avoided. Sometimes disastrous results will follow injudicious medication in this line.

Aged persons should avoid retaining urine too long. Continued failure to observe this may lead to paralysis of the bladder and death may be the consequence if the bladder is not relieved. The illustrious Tycho Brahe died in this manner. While riding with the Emperor of Austria, he obeyed court etiquette instead of Nature and fell a victim to his temerity.

Recreation in the aged is an important factor. The senile brain becomes easily fatigued, a play or moving picture show may have a complicated plot and the aged person may not be able to follow it. As a result he falls asleep and is apt to miss the whole performance. Musical comedies or burlesque shows which do not have complicated plots are easy for the aged to witness. The senile mind requires something lively and humorous and

the aged forget their old age when they are enjoying themselves.

In institutions male and female persons should not be separated. To keep old couples apart who have lived together for years is a serious matter. In institutions much attention should be given to bathing as the aged will often deceive the nurses, leading them to believe they bathe frequently, while, in fact, they seldom do.

Again, in institutions special care should be given to the eyes and an oculist should correct errors of refraction. Senile persons can pass the day so much better when they are reading and not thinking of themselves. Old age is not thought of, and they are not depressed by the dread of their last days.

CHAPTER V

WORK FOR THE AGED

CASE I.—A man, aged eighty, is the master of his household. He still maintains a little business, just enough to say that he is a business man, and takes great pride in being independent of his children. Although they are wealthy he will not buy anything that is not within his own means and will not allow his children to pay his bills.

Needless to say that this man is greatly respected by his family, and is certainly a useful citizen in more than one way. Being self-supporting he is very independent in his manner and he has not yet lost his "grip" on life. This "grip" I would call determination, the power of force that most aged people lack because they become dependent upon others.

CASE II.—A woman, aged seventy, when quiet for any length of time develops renal insufficiency, especially if she is forced to stay in bed. When she gets up again the casts disappear and she improves. I have warned her if she ever becomes ill that it would be to her advantage to keep out of bed. This person does a great deal of work each day, and it seems that exercise is essential to prevent the development of renal toxemia.

CASE III.—A mariner, aged seventy-five, had chronic Bright's disease, and when the weather prevented him from going to his workshop, he complained of various symptoms. Whenever he was ill and remained in a chair a great deal, I forced him to leave the house and go to his workshop. Toxemia always lessened when he was taking exercise.

CASE IV.—A man, aged sixty-five, lost his position in a factory, after which he immediately developed symptoms of Bright's disease. He became melancholy, had headaches, could not sleep and lost his appetite. His position was given back to him and he has been well since.

CASE V.—I once found a letter in the pocket of a man who had committed suicide. In his notebook he had advertisements from newspapers. A letter he had written to his brother said, "I cannot find work; every one says I am too old to work."

Unquestionably in the aged, lack of exercise will produce toxemia, especially of renal origin. Old men always improve when they are forced to move about, and work is the best remedy for them. I remember an old man who had worked hard for years; his children felt that they could support him and it would "look better" if they did, so they had their father give up work. The old man's health steadily failed since then and it would have been far better had he kept his position.

The Psychic Element

Old people who are inactive and unemployed have nothing to do but think of themselves, and "old age" is the only thing they can see. I know a lady, aged eighty-three, who has no disease except "aged eighty-three." Because she is old she thinks that she cannot do things that people of sixty do. I have a patient, a man, aged eighty-six, who disregards his age and takes a Turkish bath every week. Theoretically, because he is eighty-six he should not do it. However, he does not think of his age, is employed, and accomplishes many things which, according to custom, he should not do. In other words, he measures himself and governs his activities according to what he knows he can do.

"Old age" to most persons is a death-warrant. When

they begin to think of old age they become depressed. The aged are very sensitive, they like attention and like to be praised. They need encouragement and we should not allow them to dwell on their sad thoughts.

We should provide some work for our aged friends and relatives. I know a man who gives an aged man \$10.00 a month for doing errands and taking care of the mail. Another man is janitor in a telephone office; another takes care of furnaces. It is wrong to think that because a man has worked hard all of his life he should not work any more. Never change an old person's mode of living.

In many instances, labor unions have made it difficult for the aged to obtain positions; this discourages them and there seems to be no place for them.

There is another side to the question, however. Aged clerks, for instance, those who have been in a store for a long time, become very independent and do not cater to customers, consequently the firm loses a great deal of money each year because the owner does not care to discharge the men who have been working for him for years.

Nevertheless, there are many things that the aged could do and we should create something for them. If there is an aged father or grandfather, a position should be found for him and he should be well paid for his services. It may be taking care of a furnace, the care of a garden or lawn, a position as janitor, night-watchman, or any position that will keep him active and prevent him from dwelling on "old age."

Work for the Aged

With women the problem is somewhat more difficult, yet there are many things they can do such as sewing, taking care of a part of the house, and in factories there is some work that can be provided for them, if the insti-

tution is not placed upon an efficiency basis. For example, a chemical company could have a department for the aged where they would label bottles or wrap them. Although the production would not equal that of younger people, it would be a humane act to have a place where the aged could work.

It would be an act of philanthropy for every successful man to have a department where the aged could be employed in some simple thing like labeling, etc. The efficiency test would not be 100 per cent, but the aged would be greatly benefited.

Almost every one could find some work for his old relatives, but usually they are neglected and very little is done for their comfort.

Work and Recompense

If possible it is essential to give the aged good recompense for their labor, although they may not produce any great amount of work. The aged like attention and praise. Encourage their labors, observe their work and the good it will do them will be surprising.

The aged like to have you ask them to do something for you. Ask them to do a little work and it pleases them very much. It flatters them to be given this attention. The problems of the aged could be solved by attention, work and money.

A charity worker once asked me what she could give an aged couple to help them. She was undecided as to whether she should give food, clothing or fuel. I ventured to suggest that a five dollar note would make them feel better than either of those things. Give the aged money and they will appreciate it more than anything else. It is not, of course, the well-to-do aged who are apt to be neglected, not these old persons, who, possessing money, demand respect because they are independent.

These retain their power of determination and force, qualities which command respect. On the other hand, when aged people have no worldly possessions, they become depressed, lose their determination, feel dependent and lose their "grip" on life, which brings about the so-called "childishness." I believe that the senile mind in most instances would be improved if the aged were financially independent of others. Lack of money produces loss of initiative.

Pensions for the Aged

Massachusetts attempted to pass a law to pension the aged. Business houses should pension the help who have been with them for several years. A firm lost a man, on account of illness, who had been in their employ for fifty years. They have not given him any pension. Another man who has been with a firm over thirty years has now developed tuberculosis of the bones and is forced to stop working. The company did not give him any money or even send to him to see if he was in need. This attitude is very unfair to the aged and they are not shown the respect and consideration that is due them. Business houses that are paying 15 or 20 per cent dividends could easily spare 1 or 2 per cent to institute pensions for their aged help. When their old employees are ill, it would be an act of kindness to inquire if they are in need.

We could pension the aged, and we owe it to them to take proper care of them. They fondled us in our infancy, fought for us, often went through financial tortures to educate us, or deprived themselves of many necessities to see that we had clothing proper for all occasions. In fact, if it had come to a critical matter they would have given their lives for us.

As an appreciation of this the majority of aged in-

dividuals are neglected, their children fight amongst themselves because none care to take their aged parents with them, and it is surprising to see people in the higher walks of life who not only neglect their aged relatives but are actually cruel to them. Of course, many old persons are difficult to live with, the senile mental state produces a change in them which is sometimes very disagreeable. Oftentimes disease brings about a mental state which makes it almost impossible to live with them. However, many of their diseases would be modified and many of their senile mental conditions would be improved if we gave them attention, work and money.

Miss Christine S. Foster, of New York, has been experimenting on work for the aged and her work has met with much success. When reverses due to the War closed the mayor's workshop the old men were not provided for. With her own funds she opened the old men's toy shop in Lafayette Street, New York, bought materials from which toys could be made and paid the men for their work. When it was discovered that the toy shop was open to all old men the number of workers increased from 60 to 120. From the Bowery, men who seemed human wrecks, timid, doubting, shivering, in fear of rebuff, were met by Miss Foster and every old man was provided with proper clothing and a place to eat.

In the toy shop the old men worked with great enthusiasm and men who had been repeatedly refused work because they were old were given a chance. It seemed to open a new life to them. The work was interesting and they could see that it was productive. Others were interested in it and they took great pride in their work.

Miss Foster decided that social welfare should necessarily enter into the care of the aged and besides work, pay, food and a warm place during the day, the question came, where did the old men sleep? She experimented on a housing plan which proved a success. She

rented an old-fashioned flat with four rooms on the ground floor and three in the basement and gave this to eight old men. Every man was neatly and comfortably dressed, and the responsibility of the house rested with the eight old men, with one of them as a manager. Ten cents a day from each man was collected by the manager and it actually covered all expenses. They did their own housework, making the beds, sweeping, washing, ironing, dusting, washing windows and dishes. The increased cost of living raised the cost per day to about twelve cents.

Every morning, before the toy shop opened, an old man was seen with a basket on his arm going toward First Avenue. He had eighty cents to spend and he felt his great responsibility in making proper purchases.

The work of old men and women could be made productive if we would give attention to them and many other things could be provided for them in the way of work. The toy shop has been a success and could easily be placed on a larger scale by some person financially able and disposed to assist the aged in proving their efficiency. It is said that on some Indian reservations old persons are literally starved and allowed to sit outside without any attention. The Indians believe their aged are useless and give them little or no consideration. In a general way this attitude exists almost everywhere regarding the value of the aged and it will only be by systematic and prolonged labor that we will be educated to the fact that they are of value and that we require them in our daily life.

CHAPTER VI

KEEP SENILE CASES OUT OF BED

CASE I.—A war veteran, aged eighty-three, had an attack of senile bronchitis and was failing. He was very dyspneic and toxic. I ordered him to get in a chair and forced him out of bed several times a day. The results were excellent; he breathed more easily, slept better and seemed in better spirits. He was down stairs the next day when I visited him.

CASE II.—A man, aged seventy-five, had been ill seven days with senile pneumonia and apparently there was no hope of recovery. He was forced out of bed on the seventh day and it seemed to relieve him a great deal; it gave him new courage to fight the battle and he recovered.

CASE III.—I remember a lady, aged seventy, who was taken ill very suddenly and death was apparently near. I forced her out of bed the next morning and on eight different occasions I saw her recover from similar attacks.

CASE IV.—A lady, aged sixty-five, had occasionally been ill in bed from various diseases which did not have any effect on a kidney condition. Each time she was in bed she developed renal insufficiency and the urine showed many casts. When she was up again the urinary sediment became normal.

CASE V.—A man, aged eighty was very ill with cardiac weakness; he was hardly able to hold his head erect. He was forced to remain in a chair, however, and in order

to sleep had to be in a sitting position. For over two weeks he was in this state, but he was not allowed to lie down. It seemed cruel, since he was apparently too ill to sit up, yet I knew this was the only chance of recovery. After several days of suffering the old man recovered sufficiently to ride in an automobile to the doctor's office.

This method of treating senile cases apparently works well in most instances and there are very few cases where it cannot be applied. It seems cruel many times to resort to this, but the family must be taught that old people do not do well in bed and when a senile patient remains in bed a short time it is almost impossible to get him up again.

It is interesting to note in Case IV that casts always appeared in the urine when the patient remained in bed any length of time. I have seen many cases like this where the urinary abnormalities disappeared when the patient was out of bed.

Inactivity in the aged predisposes to toxemia whether from renal or intestinal origin. Many of the cases of chronic uremia will not improve unless a certain amount of exercise is taken each day. I remember an old mariner who had uremia, whom I forced to go outdoors and demanded that he should go to his work and give orders each day. He improved and continued to gain as long as he kept up his exercise.

The Psychic Element

When old persons are ill in bed they feel that their last is approaching and "old age" stares them in the face. "Old age" to them is a death warrant. The family usually feels that the end is near; there is no apparent hope of recovery, owing to the advancing years, and therefore neither anxiety nor interest is shown.

Remaining in bed the old person sees no future ahead and loses his grip on life. When this grip is broken death is sure to come. When "old age" stares any one in the face it is far from a pleasant thought.

On the other hand when a physician orders a senile patient out of bed the old person feels encouraged to think that he is able to get up. The family look at it in another light and in all ways the future for the old man is not so bad after all. More interest is shown in him and he regains his grip on life which is an important factor in the process of recovery.

The psychic element is important in all illnesses in the aged for without attention to this very important detail many an aged patient will die.

In senile cases much depends upon the encouragement given them by the physician. Do not tell them that they will get better or they will think you are merely encouraging them. It is better to make plans for them as to what they will do when they get out doors, like working in a garden, etc. In this way they get confidence in what you say and it has a very beneficial effect.

Postoperative Treatment in the Aged

We can safely apply the same principles to the surgery of the aged. In this particular it may be said that usually the best hope we have of recovery after surgical operations in the aged is to get them out of bed the next day, no matter what the nature of the operation is. If it is a hernia operation or appendectomy the rule still works.

Postoperative cases if kept in bed will not do well in the majority of instances. Pneumonia, renal or intestinal toxemia develop more rapidly and there is general asthenia as a result. If the aged patient gets out of bed the day after the operation, the danger of these complica-

tions is lessened and although there is some danger in allowing him this peculiar privilege, it is the lesser of two evils.

Getting out of bed spurs the aged sufferers to fight their battle more courageously. After all, in the treatment of senile diseases, the important thing is to encourage them and to give them plenty of attention. A talk about things that interest them sometimes has a better effect than medicines.

CHAPTER VII

SENILE MENTALITY

With advancing years the mental faculties become impaired but this impairment bears, apparently, no relation to the physical changes in the brain. Despite the advances made in psychology we are still unable to determine upon what characteristics of the brain the activity of the various faculties depend. Nor can we satisfactorily explain why certain faculties or mental powers wane, why others retain their brilliancy or appear stronger in advanced life. Memory fades early and the aged person must make a conscious effort to retain new impressions or recall old ones. Yet the aged frequently exhibit a remarkable power to recall early events that had been forgotten for many years. Usually this is not a feat of memory for the individual cannot recall these events by the power of will. They appear unbidden, arising as figures of the imagination emerging from the crypts where the long-forgotten facts have been hidden. At other times an incident will cause them to reappear.

An aged singer achieved fame during the Civil War by singing a popular song of the day. He sang the song daily, often several times a day for a couple of years, until the song lost its popularity. After a lapse of forty years he was requested to sing that song again but he had forgotten it and for several days went around humming bars of tunes in the hope that one would recall the old song. He could not recall a bar of the air nor a line of the song until some one played a few bars which he instantly recognized. These few bars did not recall the others and not until he had heard the whole tune played could he remember it. As an encore he sang another

song of the same period, one he had sung but a few times forty years before, yet which came to mind without effort or intention. This man's experience is characteristic of the faculty of memory in the aged. In most cases names are forgotten first, usually the names of casual acquaintances. After names, dates are forgotten and in some cases the time relation of events can not be recalled. Thus, a Civil War soldier could not remember if he was married before or after the War. A widow whose husband died while holding a government position during Grant's administration, insisted that he died a few years ago and that only one or two administrations intervened since his death, that the Spanish American War took place before his death, and that her children were 10 to 20 years younger than their real age. The woman was intelligent and realized that there was something wrong, that the dates and ages did not coincide but she could not account for these inconsistencies.

Memory usually shows signs of impairment soon after the brain has gained its maximum growth about the thirtieth or thirty-fifth year. After this time it becomes more difficult to retain new impressions and in old age a conscious effort must be made to retain them. A new language may be learned with ease in youth, with difficulty in middle age, while it will be very difficult to learn a new language in old age. A single reading of a book in youth may suffice to produce a clear comprehension of its import; in old age it will be necessary to read each chapter several times. Prolonged or concentrated attention, which is necessary to absorb and retain new impressions, causes brain fag in old age and this is one of the main reasons why it is difficult for the aged to remember things. Unless it is something which will rivet the attention the event or sight will not be impressed on the mind, it will not be retained and therefore can-

not be recalled. The mechanism of memory becomes impaired about the fiftieth year and thereafter it becomes increasingly difficult to recall recent events, names, dates, etc. The impairment may become so great that the events and the closest associations, as the existence of children, the location of home, the needs of the body, may be forgotten. This condition is called senile dementia.

The reasoning power increases for two or three decades after the brain has reached its maximal strength. In advanced age the quality of this faculty may not be impaired but the quantity of work that can be done is less. A writer who could write for hours without intermission must now make frequent stops. After an hour or two brain fag sets in and if he continues to write mental confusion ensues, this ends in mental exhaustion with inability to think. A famous old physician whose writings are well known, recognizes his mental limitations today and applies his knowledge to his present day work. Formerly he could write chapter after chapter without intermission, ideas following each other freely and logically and his original manuscripts showed few changes. Now he writes only when his mind is free; slowly and carefully and the moment brain fag sets in, he stops, though it be in the middle of a word. His ideas are as logical, as brilliant, as clear and decisive as ever, but where formerly he could write a chapter in three or four hours of consecutive work, he will now write a few sentences, then stop, and it may be days before he writes a few other sentences. In a comparatively recent manuscript this was shown clearly, each day's work being written on a separate sheet. A chapter containing 140 lines was written on sixteen sheets. The smallest amount of work, containing four lines was a memory task involving references to other authors. On other days when reason alone was em-

ployed he could write ten to twelve and one day fourteen lines.

A lawyer, now eighty-four years old, shows in his letter the result of brain fag. He begins rationally and deals with the specific purpose of the letter but it soon becomes rambling and he talks of matters entirely irrelevant, of reminiscences, etc., and unless something occurs to interrupt him he ends at the bottom of the sheet with illegible scrawls.

We often hear of persons who do marvelous work in their old age. If we examine closely their mental activities and compare these with their mental activities in earlier life, we will find that in every instance the brain becomes tired more easily, causing brain fag. In youth several impressions can be received and retained at the same time, in the aged they will confuse and irritate and rapidly produce brain fag. This example has been frequently given. An old man can watch a one-ring circus with pleasure, while if he attempts to watch a three-ring circus his mind becomes confused and brain fag results. He cannot maintain attention very long and when watching a parade his mind will wander after seeing a few companies. When listening to a sermon or lecture he soon falls asleep not through inattention but through excessive attention which produced brain fag. If he makes a conscious effort to maintain attention he will forget the early part of the sermon or lecture, an observation which can be made at any medical meeting where old physicians attempt to discuss papers. They will either confine their remarks to the first part of the paper, having dozed through the time the latter part was read, or they will discuss the latter part having forgotten the first.

The aged lose control of their emotions and will laugh or cry upon the slightest provocation, sometimes without any apparent reason. A sad thought will cause them to weep although the matter is in no way connected

with themselves. Aged women frequently cry when seeing a funeral, sometimes when seeing a wedding cortege or anything else in which an element of sadness exists or can be imagined. The aged are, however, usually serious, often morose or apathetic. Many exhibit a hopeless resignation to the inevitable and are constantly depressed, in others there is an unexpressed rage at their impotence. The fear of death is exhibited in various ways, or it may be repressed, but it is present in almost every case. After the senile climacteric, when the mind becomes dull, this fear diminishes or passes away along with other emotions.

The will, like the other faculties of the mind, becomes altered in the aged. In some cases it becomes weakened and the aged person who was in earlier life a dominating personality, is easily swayed from his purpose or led by the simplest ruses to contradict himself. Occasionally, an aged person will show a dogged determination which neither threats, pleading nor reason can alter, yet after holding out even against argument, which he will acknowledge correct, or against force he will suddenly take the opposite view or position.

While most of what has been said on senile mentality applies especially to the intelligent, educated individuals, the dull, uneducated mind reacts in the same way in advanced life. The dull peasant who never was emotional will not become emotional in old age, but he will exhibit eccentricities in will. Intelligence, however, gradually weakens until he becomes a complete dement, ignoring the demands of nature and even losing the fundamental instinct of self-preservation.

CHAPTER VIII

SENILE DEMENTIA

There is no sharp dividing line between senile mental impairment and senile dementia, the former a normal physiologic senile condition, the latter, pathologic. The determination of senile dementia depends upon the physician's conception of the disease, and, in the individual case, upon the existing condition as compared with the mentality of the individual when at its best, or with the ordinary mentality of other individuals of the same age and intellectual status. With advancing age the mental faculties, reason, judgment, memory, will, emotions, are all weakened. There is no uniformity in the order, extent or rapidity of their impairment although memory is usually the first to show weakening.

The term dementia is applied to marked impairment of reason and judgment. The senile individual can usually make a conscious effort to concentrate his thoughts, to judge and to reason rationally. When he is unable to do so he is suffering from senile dementia. Memory impairment alone is not usually an evidence of senile dementia but memory may be so far impaired as to make reason impossible.

There are, however, medico-legal cases in which the question of senile dementia hinges upon the extent of memory impairment. In one case the existence of a favorite child was forgotten when a will was drawn and after his death the man was declared a senile dement, although at the time he made the will he was able to reason and discuss matters rationally and manage his business affairs. The medical and the legal conceptions

of senile dementia differ, except in advanced cases, as the law does not recognize border line cases, which under some circumstances would be called senile dementia and under other circumstances would be simply called senile mental impairment. The following is a typical case. A lawyer, who died recently, was a national character from the time of the Civil War until about ten years ago when he was the government representative at an international congress. A few years later he began to show evidences of mental impairment. He began to lose interest in the affairs of the day and became careless in his habits. Formerly extremely neat in his personal appearance and surroundings he now occasionally went out of the house without having his shoes polished or his necktie properly adjusted or with his coat or vest unbuttoned. His reasoning powers were unimpaired but he found it now necessary to look up authorities which he formerly could quote offhand. He became egotistical and often boasted of what he had accomplished. These traits gradually became more pronounced and his egotism so dominant that a few years ago, upon the occasion of an anniversary celebration he requested his friends to send him letters of congratulation and commendation which he could publish. With his failing memory his reasoning power waned, yet under great stress he could arouse his reasoning ability and his former power as a brilliant speaker. On such occasions he gave no evidence of mental impairment, but if the occasion called for prolonged mental effort he became confused and stopped even in the midst of his speech. Still later he did not realize his mental confusion and while the beginning of his speeches were rational he lapsed into rambling talks on various subjects, usually reminiscences or self-laudation. At a medico-legal meeting he spoke on the subject of insanity as a defense in murder trials. For a few minutes he spoke with the ardor of the trained

orator, quoting authorities and presenting unanswerable arguments. He referred to a murder on a railway train and described the car. This led his thoughts to railroad trains and railroad companies and following the description of the car he described the legal division of a railroad company, then the organization of railroad companies and for several minutes he spoke of his participation in the organization of railroad companies in the United States. His mind was now centered upon himself and the rest of his speech dealt with various matters relating to himself. His speech degenerated into a prattle of self-laudation, his mind was confused and he was called to order. The president's rap with a gavel brought him momentarily to his senses and he sat down, but kept mumbling to himself during the remainder of the meeting. At the beginning of the meeting this man spoke sanely and rationally without the slightest evidence of mental impairment; half an hour later he was a jabbering dement. Yet after a night's rest he was mentally as bright as usual and he conducted his business in such a way that one not familiar with his mentality when at its best would have declared him sane and rational. This case is typical of mental decadence approaching the condition of senile dementia. This man's peculiarities were looked upon as harmless eccentricities, yet they clearly showed weakened mentality. He would call his office boy from the anteroom and for an hour would tell the boy of his legal exploits revealing secrets which exposed criminalities, and many indecent actions a sane man would not speak of. He made useless purchases which he sent to his friends as gifts, wrote them numerous letters that showed the progressive mental impairment which finally became obvious to the stranger. The first few lines of his letters were rational, then they became rambling and ended in undecipherable scrawls. He grew absent-minded and several times lost his way be-

tween his home and his office, a few blocks apart. Later he forgot the names of his friends and still later when picked up on the street perhaps a mile from his office he could not recall his own name and address. His reasoning power waned with the loss of memory and a year after the medico-legal meeting referred to he was clearly a senile dement.

The following case shows a variation from the usual progress of senile dementia. The man, aged seventy-five, was an ignorant farmer who could neither read nor write and could count up to twenty only. He never was a keen reasoner but he possessed good judgment, craftiness and an excellent memory. He could not learn, but trivial events in his life, such as seeing a neighbor's barn on fire, etc., were remembered in old age. It is usual in advanced life to remember early events but these memories arise spontaneously and can be recalled at will only with difficulty, usually through the association of ideas. This old farmer could recall events at will. Asked if he ever saw a barn on fire he could instantly remember every barn fire that he had ever seen. But he gradually lost the sense of time and every event whether occurring the day before or during his childhood happened "long ago." He lost the sense of relation between things and while continuing to work in the fields he did his work perfunctorily, going through the motion of raking, for example, whether a rake, hoe or spade was put into his hands. Life-long habits were continued instinctively without a realization of their import, but he could be led away from his purpose by a child. He gradually became mentally and physically weaker and spent most of his time in bed or sitting undressed by the bed. Still he retained his memory for past events and his neighbors thought it a great joke to put some question to him and leave him while he was answering it at length. He would continue to talk until he had

answered the question fully, although there was no one in the room. In this case there was never an exhibition of egotism or thought of self, no emotional outbursts, nothing more than a gradual loss of the reasoning power.

The following case presents another phase of senile dementia. A woman now past eighty was formerly a dominating personality in her home and in social circles, also a shrewd business manager. About ten years ago increasing physical disability forced her to give up business and social affairs and leave the management of her home to her children. She became deeply religious and spent most of her time reading religious literature or in such church work as would not oblige her to leave her house. A few years ago a marked change was noticed in her mentality. Though physically incapacitated she again took an interest in business and society and in her home but was now extremely critical and faultfinding, domineering and stubborn. Opposition or contradiction gave rise to violent outbursts of temper. She made extraordinary demands but her memory was failing and she soon forgot them if they were not granted. Thus she insisted upon going to a ball and purchased a ball dress. Her family, realizing the futility of opposing her, submitted to her whim and made no attempt to persuade her. The exertion of dressing for the ball exhausted her and she fell asleep while partly dressed. They undressed her and put her to bed and in the morning she had no recollection of the ball or her preparations for it. She developed an exaggerated idea of her importance and when the deference to which she thought herself entitled, was not shown her, she became abusive and later suspicious and morose. She would frequently get up at night and ransack drawers and closets but would not say what she was looking for. Delusions of persecutions by her family developed and one daughter was obliged to keep out of her sight for a month. When the daughter

reappeared the mother had forgotten the trivial event that had aroused her resentment and suspicion and had even forgotten that she had not seen her daughter for a month. Still the old lady was constantly afraid that her family would put her out of the way and it was necessary to place her in an asylum. Here she felt safe and she began again to make extraordinary demands, consistent with her delusions about herself. She wanted youthful clothes, bright colors, paint and powder, curling irons, perfumes and perfumed stationery, began writing erotic letters to men long dead, never completing a letter or asking if they replied. Later another change occurred. She would sit for hours apathetic or brooding and occasionally became loquacious, talking nonsense. Now she sits most of the time talking to herself and must be forced and helped to eat, dress and go out of doors. She is also growing physically weaker and may soon succumb to general debility.

These cases present the ordinary forms of senile dementia, but the terminal vegetative stage exhibited in the first case is rarely reached. Usually, senile debility or intercurrent disease carries off the patient soon after his mental impairment becomes so great that he is oblivious of the demands of nature. The senile dement becomes indifferent to the natural call for evacuation of the bowels and bladder and the consequent dribbling of urine and feces frequently causes local irritation and inflammation, which may become gangrenous. Prolonged retention of urine causes cystitis and by extension a pyelitis follows, or the damming back of urine may produce renal irritation so great that an acute nephritis and uremia is produced. Usually the dement loses control of the sphincter and there is a constant dribbling of urine. Loss of control of the rectal sphincter causes evacuation of feces, but there is usually persistent constipation partly through lack of exercise, partly through failure to make an effort

to empty the bowels, in addition to the usual causes for senile constipation. There is consequently autointoxication with its train of sequelae and this may cause death. Bed sores occur frequently, these become infected and a general septic infection may thus be produced. Occasionally a hypostatic congestion occurs. Many senile demented die after a short illness or suddenly and the autopsy reveals a pulmonary congestion or acute nephritis.

There is no successful method of preventing or curing senile dementia, the disease being the progressive continuation of the physiologic senile mental impairment. Many cases are temporarily benefited by mental stimulation. Memory may be stimulated by old familiar airs or plays, or by reminiscences of early days. Sights which are of daily occurrence such as visits of members of the family will produce no impression upon the patient while an old-time friend whom he has not seen for years may arouse a train of reminiscences and temporarily restore memory.

If the hearing is good, aural impressions are more likely to arouse memories than visual impressions. A senile demented who was a Civil War veteran was taken frequently to military parades, but these made little or no impression upon him. The sound of cannon fired upon the Fourth of July aroused him and for a few days he spoke of his war-time experiences. It is very difficult to arouse reason and judgment. Occasionally, under some extraordinary stimulus, reason will be temporarily restored but interest and attention cannot be maintained as brain fag sets in rapidly. The husband of a senile demented died while she was in an asylum. She had not seen him for several months and did not recognize him when he visited her. She was not notified of his death but was taken to the house on the day of the funeral. She was apathetic when led to the coffin and gazed

absently upon the corpse for a few minutes. Then she suddenly gave a scream, threw herself over the coffin and called her husband's name, begging him to take her with him to the grave. She became quiet in a few minutes, was led to a chair and promptly fell asleep. She was awakened with difficulty, but when awake she again relapsed into the apathetic attitude and could not be roused to a further realization of the proceedings.

An effort was made to induce a senile dement to sign a will. Constant urging annoyed him and he became suspicious that some harm would come to him, this roused for a moment his reasoning faculties. He listened to the reading of the document and objected to some of the provisions. Before the reading was completed he fell asleep and when awakened his mental powers were so dulled that he could not be induced to hold the pen in his hand or pay any attention to what was said to him.

Proper recreations will help to retard the senile mental impairment, but these as all other measures for improving senile mentality are of temporary benefit, and useless when the mind has become so weakened that it cannot comply with the instinctive measures for self-preservation.

CHAPTER IX

DIET IN OLD AGE

Habits in diet extending over a period of years should not be changed no matter how bad they seem to be. It is often dangerous to correct habits that may have even a pernicious effect. We have seen many cases of men who suddenly gave up drinking or the use of opiates and died soon after.

Most aged people ate in their youth a variety of food different from that we use today. In the past years the coarsest food was the rule and a man who was accustomed to it in his earlier days should not change it later.

Regularity in meals is essential to the aged and should be carefully observed. Broiled and roast meats are usually well borne. The older people in order to render a mutton chop tender and juicy would cook it between two other chops. In this way the inner chop would escape any hardening from the fire and it would remain tender throughout. Mutton is the most satisfactory meat. Fat or meats that have been pickled are harmful. Tripe is usually easily digested and the animal jellies are allowed. Fried meats are not so readily digested as boiled or broiled meats.

Milk is the most satisfactory article of diet because it is the most easily digested and contains the least amount of material from which toxins may form. Milk protects the kidneys and furnishes all the principles of good nourishment. In acute gastritis or acute nephritis an absolute milk diet is indispensable. Whey and buttermilk or koumiss or milk and vichy, equal parts, may be used.

Birds are ordinarily satisfactory except ducks and geese. For old persons game should be kept till it is tender but not until it becomes high. Fresh eggs are excellent for the aged. They may be prepared in any way. A raw egg beaten up with a glass of sherry and a little sugar, with a piece of toast or dry bread, make an excellent and palatable lunch.

Fresh fish, except bluefish, is permitted to the aged. The oily fishes as eels, herrings, salmon, etc., should be avoided as they are apt to disagree, and pickled or smoked or salted fish should be forbidden altogether.

Most vegetables may be given, but peas, beans and cabbage tend to cause gas in the stomach and should be avoided. Cucumbers and tomatoes should be forbidden.

Plain puddings, such as rice, sago, arrowroot, bread and tapioca are allowed. Rich puddings and pastry should be taken only with moderation. Fruits generally are beneficial. Sometimes a baked apple or prunes will help to regulate the bowels.

Ale and beer as well as wines are excellent foods for the aged. Malt liquor will do them no harm unless they are of a bilious nature or suffering from nephritis. A glass of wine at luncheon and a glass or two at dinner may be taken. Sherry and port wine do not effect the stomach and seem to give strength. Bordeaux or Red Wine are satisfactory in cases of chronic nephritis and also excellent tonics for the aged.

The following diet list includes the foods best adapted for the aged, being nutritious, easily assimilated and leaving little urea-forming refuse.

BREAKFAST

Apples (baked, raw or stewed), oranges, grape-fruit, grapes, berries in season, cantaloupe; eggs—soft-boiled, shirred, scrambled, dropped on toast; broiled chicken;

bacon; broiled honeycomb tripe; fish—mackerel, perch, pickerel, white fish, trout, cod, haddock, halibut; baked potato; stale or toasted bread with plenty of butter; tea, coffee, or glass of milk.

LUNCHEON

Raw oysters or clams, lobsters; soups (preferably purées), pea, bean, potato, asparagus, celery; chops, beef-steak once or twice a week; roasts—beef, mutton, lamb, veal; chicken, ham, tongue; fish, broiled or baked in cream; vegetables—potato, spinach, lettuce, stewed celery, cauliflower, beets, squash, green peas, asparagus, string beans; salads—lettuce, endive, escarole with French dressing; dessert—ice cream, apple tapioca, sago, blanc mange; crackers and cheese—Camembert, Brie, Roquefort, cream, old-fashioned curd, cottage; one glass of milk or a cup of tea or cocoa.

DINNER

Eggs; lamb stew with vegetables; baked potato, bread (stale or toasted) with plenty of butter; stewed fruit; one glass of milk, stale bread or crackers and milk with blue berries or baked sweet apples.

Do not eat fish and meat, meat and eggs, or fish and eggs at the same meal.

Meat or fish should not be given oftener than once a day.

Three or four glasses of milk should be taken daily, either with or between meals.

It is wise for the aged to adhere to regular hours. It is advisable to strive against falling asleep in a chair after dinner as it is said to cause cerebral congestion.

The old rule that when we are ill we should take small quantities of food frequently does not apply to the aged.

The process of digestion being longer, it takes a few hours more for digestion to be completed. Therefore, it is well, with the aged, to allow five or six hours to elapse between meals. In this way the stomach has an opportunity to rest.

In my sections on Senile Diabetes and Nephritis will be found a discussion of diet in these diseases. In many conditions of the aged, I do not change the diet because a change in their mode of living is not well borne by the system. Old persons, who in their younger days were obliged to eat coarse food, must have this kind of food now, provided they have had it for several years.

The diet given above is a protective regimen for the senile kidney. This diet is also applicable to chronic nephritis, rheumatism and gout in the aged.

I have said nothing here of scientific feeding by calories and percentages as we are rarely able to carry out scientific feeding on the calorie basis in the home and seldom in institutions. As a matter of scientific interest it may be stated that the aged require less food of all kinds and less calories than in earlier life. Between the ages of seventy-five and eighty, the female doing light housework and the man doing no work, but taking sufficient exercise, require from 1350 to 1500 calories a day. The food quantities in a number of senile cases were found to be about 50 grams protein, between 170 and 180 grams of carbohydrates and from 35 to 50 grams fat. In the case of a man eighty-five years old the quantities and caloric value of the food could be fairly determined, the diet consisting almost exclusively of milk and bread, with an occasional baked apple and on rare occasions a small piece of chicken or turkey and a glass of wine. In this case the daily amounts were, protein 50.43 grams, carbohydrates 172.8 grams, fat 49.88 grams; caloric value 1415. The proportion of protein to carbohydrates was 1 to 3½ (1 to 4 in maturity), the protein factor being slightly

less than half the amount required in maturity, the carbohydrate factor slightly more than one-half, while the amount of fat was but little less than the amount required in maturity.

When the teeth fall out and meat can no longer be chewed, meat must be finely chopped or omitted altogether and when omitted, protein from another source must be substituted. A sufficient amount can be obtained in milk, eggs or legumes.

The sense of hunger is not a good indication in the aged of the necessity for food or the quantity that should be taken. It is often perverted and they will feel a gnawing sensation or a sensation of emptiness in the stomach shortly after a heavy meal while at other times there will be no desire for food though the stomach is empty. They are generally like children in their likes and dislikes, gorging themselves when given some article of food they like and indifferent to the food when the dish is not relished. Owing to the degenerative changes in the taste bulbs the food must be highly seasoned, either sharp, sour, sweet or salty, otherwise it is tasteless or insipid and they will reject it. An excessive amount of salt is detrimental to the kidneys but the spices, acid and sugar are beneficial in old age.

While habit is the main factor in the selection of food, when senile changes in taste occur, or when mental impairment appears, common sense must be used to select the kind and quantity of food best suited to the aged individual.

CHAPTER X

SENILE CONSTIPATION

In hospital clinics attended by old people, it is surprising to find that so many diseases can be traced to constipation. In treating the aged, if we give attention to the intestines, we solve one of the greatest problems of geriatrics.

A consideration of the normal degenerative changes accompanying senility will at once give us the reasons why most persons in advanced life are constipated. First, there is diminished capacity of the stomach and intestines due partly to thickened mucous membranes and partly to the lack of nourishment, due to arterial changes. The muscular coat of the intestines is atrophied and in some cases not a trace of it can be found. The villi and mucous follicles are atrophied and very little mucus is secreted. In lessened power of the muscular coat and resulting impediment of the peristaltic motion, we see in part the cause of constipation and further diminished nutrition of the body in old age.

Dyspepsia from which we observe aged persons suffer, depends partly upon the prolonged retention of food in the stomach, a consequence of imperfect mastication, and partly upon the modified state of the gastric juice, but it is chiefly due to the blunted sensibility of the nerves of the stomach, the diminution of nerve power resulting in lessening of power of the intestinal muscles, causing flatulence and also constipation.

Persons who give but little attention to their health in general are apt to concentrate their cares and anxieties on the bowels. They care for them as a nurse cares for

a child and their uncertainty as to the kind of pill they shall take at night is a source of constant worry to them.

It would be far better judgment to give more consideration to the diet and the care of the skin than to concentrate one's attention on the intestines. It would be better to have an evacuation every two or three days than to be in the mental condition some aged persons reach as a result of their excessive attention to the bowels.

A daily action is preferable if it can be obtained without harsh measures. However, in many senile cases careful study of the patients will teach us that a bowel movement every other day is sufficient. Violent straining should be prohibited because it may cause hernia or hemorrhoids.

A glass of cold water in the morning may help the bowel action and sometimes a cigar will be the means of stimulating peristalsis. I believe the best time for a bowel movement to be soon after a meal because the ingestion of food tends to stimulate peristaltic action.

When the fecal matter becomes hardened in the rectum it is sometimes very difficult to relieve. The rectum becomes obstructed and the old patient dreads a movement on account of the pain; the longer he waits the greater the accumulation of the hardened substances in the rectum. Sometimes enemata of oil will relieve the condition but usually it is necessary to remove the mass, with the finger covered by a rubber finger cot, or by means of a scoop. As soon as the obstruction is relieved the bowels will usually be very loose for several movements.

When the aged are ill from any other cause it is sometimes difficult to obtain a bowel movement and enemata must be restored to. I use, for enemata, inspissated oxgall mixed with oil or a mixture containing epsom salts, glycerin and olive oil. If the quantity of liquid is not great, its use is not dangerous. It has been said that enemata are dangerous in the aged, but I have never

seen any bad results due to them. If the patient is very weak, I use an adult size glycerin suppository inserted into the rectum and repeat this every hour until results are obtained.

If the bowels have not moved in several days, I sometimes give five grains of calomel with five grains of sodium bicarbonate and a saline laxative by mouth the next morning. Occasionally it is necessary to use croton oil.

One of the best pills I have seen for the aged is the official compound rhubarb pills containing aloes, myrrh, rhubarb and oil of peppermint. One may be given after each meal or two may be taken at bedtime. Podophyllin in $\frac{1}{4}$ -grain tablets occasionally works well but is very slow in its action.

The use of petroleum or Russian oil is not new. In Floyer's *Medicina Gerocomica*, printed in London, in 1724, mention was made of the use of oil for lubricating the bowels. Russian oil, no doubt, works well in many cases, but it should not be forgotten that its action is not due to lubrication, it acts as a foreign substance in the intestines that Nature must eliminate. In this respect it does not differ from any other cathartic of mechanical action.

The food we ordinarily eat, the nourishment that enables us to do our work, almost every diet prescribed in the treatment of disease, tend to produce constipation and the only way to overcome this is to use the proper remedies.

It is by far better to take a pill every night than to suffer from toxemia as a result of faulty elimination. Persons who will not take laxatives because they fear they will always have to take them may die of toxemia. Laxatives do no harm when well selected and if they lose their effect we must change to another kind. Later by returning to the remedy first employed we again have satisfactory results.

The compound cathartic pills, or a tablet containing aloin, strychnine, emetine and podophyllin may work well. Cascara sagrada is an excellent remedy for senile constipation and old persons can take it for a long time before being obliged to increase the dose. The aromatic fluid extract of cascara is very satisfactory.

Bile salts are also satisfactory in many cases. Owing to the secondary effects of drugs due to cumulative action it is not safe to use belladonna in combination with other remedies as continued use may produce undesirable secondary effects.

The simpler the remedy the better, and the compound rhubarb pills seems to be very efficacious. The aged will misinform you about the true condition of their intestines, stating that they act every day when perhaps they do not move oftener than once a week. Sometimes they actually forget when the bowels moved last. When old persons are sick in bed no matter what the cause is, get the bowels open. They may say that they have not eaten anything for several days, but this is very likely not accurate.

When called to see an old person who is ill and failing rapidly, when nothing seems to help him and you can see death in the background, when, no matter the disease, your remedies do not have the desired effect, open the bowels by an enema and also a laxative by mouth and you will be surprised to see how many times death will be postponed and the old person will recover.

A word should be added on the use of saline laxatives. This form of medication is the most effective to rid the body of toxins, but unless the patient is robust its continued use will be too depleting. If patients are robust, they can take a saline each morning, a so-called "morning refresher," but if they are frail, tablets are better for continued use.

CHAPTER XI

TOXEMIA IN THE AGED

CASE I.—A man, aged seventy, consulted me for general weakness which he had experienced for some time. He said that he could not sleep at night, had indigestion, that his mouth had a bad taste in the morning, that he suffered from vertigo, occasional nausea and constipation.

His family had observed, too, for the past few weeks, that his mental condition had changed and that he was in the state commonly called "childish." He was greatly irritated by music, could not bear ordinary conversation and was failing in many ways.

The tongue had a thick white coating and the odor of his breath implied a fermentative condition of the stomach; the temporal arteries were tortuous and the pulsebeat visible. If he was in a warm room after lunch he would fall asleep. Moreover, he would nap several times a day and when night came, naturally could not sleep. This is very common in the aged, but old persons are apt to deny it; if you suggest it to them they will not admit that they have been asleep.

This patient was given two compound rhubarb pills each night and a teaspoonful of the compound solution of sodium phosphate before breakfast. In the course of a few days he was better and his mental condition improved very much.

CASE II.—A woman, aged sixty-eight, complained of neuritis of the left arm. She was very nervous and there were many symptoms of toxemia. The tongue was

coated, she had headaches, vertigo, was very drowsy and depressed. She was given a teaspoonful of milk of magnesia every two hours and occasionally a compound cathartic pill at night and she improved on this treatment.

CASE III.—A man, aged fifty, previously in excellent health, was struck by a motorcycle and received a severe blow on the head. He became unconscious immediately and remained in coma for several days, finally recovering. While in coma he seemed to be very toxic.

CASE IV.—A man, aged sixty-seven, was taken suddenly ill with convulsions, and later went into a coma and remained in this condition for several days. When he recovered from the coma he was still somewhat toxic. There apparently was much congestion of the prostate, for he could not void without being catheterized. His headaches were violent, but in the course of a month he was out and has since been at work. It is now two years since the attack, and he is working a great deal more than before he was taken ill. Naturally, in this case, a diagnosis would be made of uremia or diabetes, but repeated and careful examinations failed to reveal any evidence of abnormality in the urine.

It is possible that purinemia or toxemia of intestinal origin may be the cause of many cases terminating fatally. For this reason a correct diagnosis is imperative and usually patients will recover if proper treatment is promptly given.

I have seen many aged persons very inactive and apparently extremely toxic, who were relieved by exercise. It is a serious matter to allow an aged person to remain quiet and in a warm room. Force aged patients to walk in the fresh air and they will usually improve. Inactivity and sleep seem to increase the formation of certain toxins.

It is difficult to ascertain the origin of the toxins in many cases, in the vast majority of cases, however, they are of intestinal or renal origin. Indicanuria is present in most cases. Lack of exercise and constipation are the usual causes, although toxemia may be found in patients who have diarrhea, the latter being Nature's method of relieving the condition.

Most of the senile diseases seen in private practice can be traced to constipation. Much depends upon the remedy selected, for some may cause free catharsis and yet not rid the system of its poisons.

There are many cases in the aged that are similar to uremia and it is very difficult to differentiate them. Take, for example, a specimen of urine which shows casts in the sediment. Symptoms of toxemia from intestinal origin may be attributed to the kidneys when the casts are merely a normal finding, and the kidneys may be functioning properly. It is very easy to make a mistake in diagnosis, for a normal urine from a senile patient may show albuminuria, casts and leucocytes. Also, indicanuria may not be present in senile cases although there is marked intestinal toxemia.

Diabetes may cause symptoms similar to intestinal toxemia and yet the urine will not show acetone or B-oxybutyric acid. The urine may be free from sugar, yet the blood sugar examination may show diabetes to be present. Urinalysis should be made in all senile cases because failure to discover a disease may hasten death.

The aged frequently become toxic on account of absorptions from an internal tumor. For example, carcinoma of the stomach will produce symptoms similar to other toxemias. A peculiar odor of the breath makes the diagnosis almost certain.

I once saw a famous old man who, although apparently in excellent condition, showed certain signs of tox-

emia. The temporal arteries were tortuous and pounding, there was slight puffiness under the eyes, the skin had a slight yellow color and the odor of the breath was noticeable a short distance away. He suffered from brain fag and could not listen to conversation more than a few minutes without becoming fatigued.

Brain fag in this instance was said to be due to old age, but in reality was caused by lack of care of the bowels. Even though the bowels move each day, it is possible to have intestinal toxemia; a course of treatment will undoubtedly relieve the toxemia of old patients of this type.

Many of the symptoms commonly attributed to senile brain changes are entirely due to toxemia. I recollect an old man who was in a very nervous condition, and it was said that his mind was unsound. He contrived against his family and told his friends that he was abused at home. He became ill, was given a course of eliminative treatments and greatly improved. As his body was rid of toxins he changed mentally and saw good in every one and everything. I have observed this in so many cases that I believe many of the peculiar traits ordinarily associated with such patients are merely symptoms of toxemia.

The first symptom of toxemia is usually a complaint of weakness; patients express it by saying they have "no strength." Loss of sleep, loss of appetite and lack of strength are the most common things we hear of from the aged and they require careful analysis. As a matter of fact, they have as much strength as usual but the toxemia produces a feeling of weakness.

To overcome this, physicians usually prescribe tonics such as gentian, calisaya or strychnine sulphate, but without any results. There is no tonic that would be of benefit without an eliminative treatment.

Treatment

A great deal depends upon the condition of the tongue. If the tongue is coated with a white fur, an alkali should be prescribed. If the tongue is red and the papillæ prominent, a mixture of nux vomica and hydrochloric acid is advised.

A saline laxative is the best method of treatment in almost every case. If the patient is physically frail, though, it is well not to continue the use of this saline too long. An aged person, if robust, can take a saline each morning before breakfast. Citrate of magnesia, Seidlitz mixture, compound solution of sodium phosphate, magnesium sulphate or Pluto water may be used.

Salines may be continued as long as necessary if the patient is robust, but if he is physically frail it is better to use pills or tablets because salines are too depleting. I have used the compound rhubarb pills a great deal for the aged, usually prescribing one after each meal or two at bedtime. Compound cathartic pills work well and podophyllin tablets $\frac{1}{4}$ grain may be used occasionally although they are very slow in their action.

If the stools are dark in color and the tongue coated with a thick white or brown fur, I prescribe $\frac{1}{40}$ grain podophyllin tablets, one to be taken every three hours. If the stools are light in color, I give $\frac{1}{10}$ grain of mercury and chalk, one tablet to be given every ten minutes until ten are taken, followed by a saline. The podophyllin tablets may be continued indefinitely and work well in the aged. If the stools are very offensive, I prescribe tablets containing $\frac{1}{1000}$ grain bichloride of mercury, one to be taken every three hours.

As a supportive remedy to be taken with the eliminative treatment I give a tonic consisting of tincture of nux vomica and elixir calisaya or tincture gentian compound. As a table water I prescribe Vittel Grande

Source or Salée, a pint or quart to be taken daily. Celestins Vichy may be used in its place.

The mineral waters seem to hasten the elimination of toxins and do not deplete the system. It is a geriatric principle that we must stimulate the aged, Nature tending to cure the young, and kill the aged.

I do not as a rule interfere with the diet. Eggs are usually countermanded, but you will find in my sections on senile diabetes and nephritis that I do not advocate changing the diet of the aged a great deal. The same rules apply, in my opinion, to the diet for toxemia in the diseases mentioned above.

Many theories of the association of the longevity and toxemia have been advanced, but one fact remains certain. Attention to the correction of intestinal toxemia will cause a great deal of comfort to the aged and will prolong life. In some cases it may even add several years to their lives, but in time a toxemia of some kind, in most instances due to the kidneys, cancer, or pneumonia, will cause death. Much can be done to help the aged to live more comfortably and longer and the correction of toxemia will improve the mental condition of many senile patients. The word toxemia is, of course, very vague, but its presence in some form is easily noted by such symptoms as headache, dizziness, fatigue, bad odor of the breath, coated tongue, etc., and in these cases free catharsis is indicated.

CHAPTER XII

BLOOD PRESSURE IN SENILE CASES

CASE I.—A man, aged fifty-six, consulted me for vertigo. For some time he had a pressure in the occipital region; experienced sensations of electric shock on lying down, complained of a troublesome buzzing in the ears and was quite deaf. He was very drowsy and mentally depressed, his case belonged to the plethoric type and his appearance indicated toxemia. He had a position on a railroad and the time was approaching when he would be forced to give up his work.

Examination showed a systolic pressure of 230 and the diastolic pressure registered 140 on the aneroid apparatus, but the arteries did not show apparent changes of degeneration. Urinary examination revealed the presence of albumin and the sediment showed many hyaline and granular casts.

Nephritis was undoubtedly the cause of the increase in blood pressure and treatment was given in this direction. He was given a half ounce of magnesium sulphate each morning before breakfast and was placed on a milk and cereal diet. I prescribed the dried substance of pig's kidney, given in tablet form, but gave him nothing to directly reduce the blood pressure, such as the nitrites or iodides.

On this regimen he improved and the blood pressure was reduced each week about ten mm., until it was 150. He lost about twenty-five pounds in weight and said that he had never felt better in his life. He remained on this strict diet for two months, gradually adding a few

vegetables and fresh fish. Notwithstanding the strict diet and depletion, he said that he felt stronger than he had in several years and was able to work.

The blood pressure rose to 160, he increased his diet and the pressure remained at this point. The hearing improved, his so-called catarrh of the nose disappeared as did the other symptoms, the urinary examination showed an improvement, but the casts did not entirely disappear.

He moved to another city and I lost sight of him for a time. Later a letter from his physician said that the blood pressure had returned to 210 and a year afterward when I saw him he said that as soon as he discontinued the treatment the former symptoms returned.

CASE II.—A woman, aged seventy-two, had chronic nephritis which caused edema of the legs and many vague symptoms, such as neuralgic pains, cramps of the legs, itching of the skin and numbness. Her blood pressure was 180 systolic and 100 diastolic. Under a treatment of salines and a nonnitrogenous diet, the blood pressure became lower and there was an improvement in the general condition.

CASE III.—A man, aged sixty, had chronic nephritis which caused him a great deal of annoyance. His systolic blood pressure registered 220 and the diastolic 140. He had purchased a sphygmomanometer and had his valet take his blood pressure every day.

There were periods when he felt better but during this time his pressure was higher than when he was ill. This fact led me to believe that it was one of those cases that would do better without interference. In other words, there was a certain harmony in the action of the internal organs and as long as this action was not disturbed he maintained a condition which was fairly good and lived in comparative comfort. I advised him to disregard the .

blood pressure and apply a little "skillful neglect" to his case.

The fact that his blood pressure was high worried him and caused mental depression. He lived for two years in this way and traveled quite extensively a part of the time. He was very careful of the emunctories, did not overeat, but ate the food he liked and used an electric light bath each week which facilitated elimination of toxins through the skin. From the time he stopped treatment, which was given to lower his blood pressure and lived a life similar to that which he had lived for years, he found he was more comfortable and probably lived as long as if he had resorted to more drastic measures.

The term blood pressure is frequently misused and we make a mistake in thinking of it as a disease while it is merely a symptom of some other condition. There are many causes of an increase in blood pressure, but in the main it is due to an increased peripheral resistance due to the increased work the heart has to do in order to force the blood through the congested organs.

In itself, arteriosclerosis does not always produce high blood pressure. If there is cardiac hypertrophy there may be an increase in pressure, but if there is no hypertrophy there will be a low blood pressure due to the increased tonicity of the vessels. This is particularly true in interstitial nephritis where it is common to find an advanced case which has a pressure of 100, while in the parenchymatous form of nephritis there is usually a marked increase in pressure, probably due to the enlarged kidney being also congested, causing the heart to work harder to force the blood through it. In the interstitial or contracted kidney there is not always a congestion and accompanying increase in the peripheral resistance. It does not always work out in this way for in some instances the contracted kidney will cause a blood pressure higher than that caused by enlarged

kidney. The difficulty encountered in diagnosing a high blood pressure from the appearance and physique of the patient alone without a sphygomanometer is well illustrated by the following cases:

CASE IV.—A woman, aged sixty-five, complained of headaches and dizziness. She did not have many other symptoms and from the fact that she was physically frail, weighing about 110, it was natural to infer that she would not have a high blood pressure. I saw her in my office on several occasions, but she did not appear very ill. She was seized suddenly with an attack similar to asthma and in my routine examination at the bedside I was astonished to find that the blood pressure was 240 systolic and 170 diastolic. I was alarmed to find a large quantity of albumin on urinary examination and also blood and casts. She died the next day from cerebral hemorrhage and had hardly given a warning of the seriousness of the affection until twenty-four hours before her death.

CASE V.—A man, aged sixty-eight, robust and of the plethoric type, weight 210, presented the classical symptoms of high blood pressure and nephritis. The pulse was full and could be rolled under the fingers and the temporal arteries were tortuous, the pulsation being visible. To make a snap diagnosis almost any one would have said high blood pressure, but examination repeated on different days with a Tycos and Sanborn apparatus showed that the systolic pressure was 120 and the diastolic 80.

These two cases illustrate the impossibility of depending upon the appearance of the patient. It is very common to find cases of interstitial nephritis that are accompanied by low pressure. There are several factors which are apt to cause high blood pressure; for example, thyroid disease, or another factor which must be given

consideration is the viscosity or density of the blood itself. In such diseases as anemia, tuberculosis and marasmus, the blood is thin and the specific gravity low, with resulting low blood pressure. Nephritis and some other diseases produce a higher specific gravity and if this is high the blood passes through the arterioles and capillaries with resulting increase in peripheral resistance. All those factors tend to raise the blood pressure in the aged and a natural outcome of advancing years is higher pressure.

We must know the normal limits and not mistake the pathologic senile pressure for a normal condition. Some of the causes which produce high blood pressure, which is pathologic, are plumbism, alcoholism, nephritis, chronic toxemia of intestinal origin, gout, diabetes, syphilis and thyroid degeneration. These are outside the normal senile state where high blood pressure is a part of the senile change.

Many physicians have made rules to give normal pressure reading for old age. Some observers have stated that an approximate rule is to add 100 to the age, but this is very inaccurate. Many patients live for years in comfort with a blood pressure of 220 and after careful study I was convinced that it was normal in those persons. I have even seen higher blood pressure and yet the patient would apparently be comfortable. To meddle with cases of that kind might give disastrous results. A man of ninety would ordinarily have a normal systolic pressure of 190 or more. The pressure varies from day to day and from month to month. Food, exercise, rest and elimination probably affect it. If the old person has symptoms that can be traced to high blood pressure, he should be treated, but if one simply treats the increase in blood pressure, bad results may follow.

Trousseau said that half the science of medicine consisted in knowing the natural course of disease. This

applies to old age because we can not differentiate the normal from the pathologic conditions if we do not know normal senile changes. Too much stress has been laid upon high blood pressure in old age, within certain limits high blood pressure is normal and treatment may cause fatal results. We must not interfere too much with Nature, and in attempting to cure the condition of an aged patient not endeavor to make it similar to the normal condition of a man twenty years younger.

In old age it is very difficult to get an accurate reading on the sphygmomanometer because of the differences between the sclerosed arteries of each arm, which makes it necessary to take the pressure on each arm. Auscultation will assist in obtaining an accurate reading, but it may be well to repeat it on different days in order to make an average. Occasionally, the radial arteries will be so sclerosed that it will be an impossibility to take it even by the auscultatory method. The artery also may be misplaced.

The factors which modify blood pressure are cardiac hypertrophy, arterial tension, peripheral resistance and the specific gravity of the blood. Chronic nephritis causes an increase in resistance and in time cardiac hypertrophy develops. The best method of relieving the overworked heart is to reduce the capillary resistance. Imagine a horse who is carrying a heavy load and has become exhausted, the best stimulant is not to whip the animal but to remove a part of his load.

High blood pressure, except when due to specific causes, is almost invariably the result of this increase in resistance. To treat it by the nitrites would not relieve the cause of the condition.

Diastolic pressure in old age varies, but there are some cases in which it is strikingly different from that of maturity. Myocarditis, gout, carcinoma, or debility due to various diseases, cause a low diastolic pressure. On

the other hand, high diastolic pressure may be due to heart disease and nephritis. Aortic regurgitation may cause a low diastolic pressure. In nephritis, the diastolic pressure is usually high and up to a certain point in cardiac hypertrophy there is a high diastolic pressure, but later the pressure falls when the degree of hypertrophy has reached its maximum.

The accompanying tables taken from the monograph of L. M. Bowes (*The Journal of Laboratory and Clinical Medicine*, January, 1917), give his experiments on systolic and diastolic pressure in old age:

TABLE I
THE AVERAGE BLOOD PRESSURE OF BOTH MEN AND WOMEN

AGE	NUMBER EXAMINED	SYSTOLIC PRESSURE	DIASTOLIC PRESSURE	PULSE PRESSURE
65-69	32	151	82	65
70-74	39	160	86	73
75-79	38	166	86	79
80-84	27	175	84	83
85-89	7	170	90	77
90-94	7	142	81	61

TABLE II
THE AVERAGE BLOOD PRESSURE OF THE WOMEN

AGE	NUMBER EXAMINED	SYSTOLIC PRESSURE	DIASTOLIC PRESSURE	PULSE PRESSURE
65-69	21	154	83	71
70-74	29	158	83	72
75-79	24	170	88	81
80-84	16	183	85	91
85-89	7	170	90	77
90-94	3	137	80	53

TABLE III
THE AVERAGE BLOOD PRESSURE OF THE MEN

AGE	NUMBER EXAMINED	SYSTOLIC PRESSURE	DIASTOLIC PRESSURE	PULSE PRESSURE
65-69	11	145	81	63
70-74	10	166	91	75
75-79	14	159	89	77
80-84	11	163	84	80
85-89	0	—	—	—
90-94	4	145	81	65

Conclusions

Dr Bowes' conclusion, taken from the same journal, are well worth reading. They are as follows:

1. Only repeated readings of both systolic and diastolic pressure are of value, and both arms should be used for observations in old people.

2. Inequality of the pressure of the two sides is frequent in arteriosclerosis.

3. There may be a high or low blood pressure in arteriosclerosis; the pressure falling with involvement of the heart muscle in the process of fibrosis resulting in chronic myocarditis.

4. High systolic pressure associated with high diastolic pressure indicates cerebral hemorrhage, or nephritis.

5. A sustained hypertension, both of systolic and diastolic pressures, indicates cerebral hemorrhage, while hypotension indicates cerebral embolism.

6. A sustained high systolic with a low diastolic pressure usually indicates cardiac trouble. A low diastolic pressure is common with aortic regurgitation.

7. A high pulse pressure is frequent in arteriosclerosis and aortic regurgitation; and a sustained high pulse pressure usually results in a failing heart.

8. A systolic pressure of 100 may not keep a man from his daily business.

9. A lowering blood pressure indicates a failing heart.

10. Acute enteritis lowers the blood pressure.

My own experience is that we may get every kind of variation in blood pressure in the aged and yet be within normal limits. Some patients who have a pressure of 230 will live several years. The following table shows the results of examination of a few cases. They are given in the order in which the patients consulted me in private practice. My records show that this is a fair average of cases.

	AGE	WEIGHT	SYSTOLIC	DIASTOLIC	CLINICAL CONDITION
Miss B.	75	135	142	75	Nephritis
Mrs. P.	75	90	230	140	Normal Senility
Mrs. G.	68	175	162	92	" "
Mr. G.	70	150	130	90	" "
Mrs. L.	54	165	90	60	Myxedema
Mr. D.	76	158	184	90	Normal Senility
Mr. G.	76	138	230	110	" "
Mr. H.	77	162	144	100	" "
Mr. D.	68	165	202	120	Nephritis
Mrs. C.	79	120	138	70	Normal Senility
Mrs. C.	86	125	200	110	" "
Mr. K.	76	148	162	80	" "
Mr. G.	86	120	190	98	" "
Mr. B.	65	140	170	100	" "
Mr. S.	73	140	204	130	Nephritis
Mr. P.	70	135	220	140	" "
Mrs. B.	72	160	230	140	Asthma
Mr. B.	61	230	140	80	Emphysema
Mrs. G.	65	190	150	70	Asthma
Mr. Y.	82	150	210	110	Normal Senility
Mrs. J.	67	93	190	120	" "
Mrs. M.	64	165	232	136	Nephritis
Mrs. B.	68	150	180	124	Normal Senility
Mr. T.	79	160	142	70	" "
Mr. O'H	74	140	170	120	Nephritis
Mr. T.	78	145	160	100	Normal Senility
Mrs. B.	64	115	162	92	" "
Mrs. W.	74	124	198	94	" "
Mr. W.	71	119	142	88	" "
Mr. L.	74	130	162	60	Senile Pneumonia
Mrs. K.	70	123	142	77	Normal Senility

In my opinion a great many cases of increased blood pressure are caused by nephritis and attention to the kidneys will give the best results. We may find cases where the nitrites are beneficial and if specific disease is present the iodides should be administered. The latter remedy is very irritating to the stomach and kidneys and should not be used except when necessary. The treatment indicated in the chapter on Senile Nephritis is, in my opinion, excellent for most cases if there is an increase in blood pressure.

The term high blood pressure has become a fad today, as the term "hardening of the arteries." If we do not forget that these conditions are not diseases, but merely

symptoms of disease, we will be better equipped to treat the conditions in a more intelligent manner.

The greatest difficulty in geriatrics is to be able to differentiate between normal and pathologic senile degenerations. Until we recognize this fact we will be making serious mistakes in the therapeutics of senile cases.

CHAPTER XIII

ARTERIOSCLEROSIS

CASE I.—A man, aged forty-eight, had a marked fibrosis of the arteries, cardiac hypertrophy and interstitial nephritis. His blood pressure was 210 systolic and 120 diastolic.

He was nervous and irritable, had a sensation of pressure in the occipital region, his vision was blurred and he was in a state of extreme mental depression. In every way it was apparent that his was a degenerative condition consistent with a man of seventy-five. There was no history of syphilis, rheumatism, gout or plumbism, but interstitial nephritis had developed since he had scarlet fever several years ago.

CASE II.—A man, aged thirty, had marked calcification of the arteries. He had tuberculosis of both lungs, with a cavity on the right side. Two months before he died he developed a carcinoma of the tongue which was spreading rapidly until an attack of asthma, due to the tuberculous condition, brought an end to his suffering.

CASE III.—A man, aged seventy, had marked arteriosclerosis. He complained of headaches, loss of memory, nervousness, blurred vision, and other symptoms commonly described as typical of arteriosclerosis. His symptoms were due, however, to parenchymatous nephritis.

Case I describes a man of forty-eight who appears in every way like a man of seventy-five. In other words a case of premature old age. Case II is very unusual and represents a type in which it is difficult to ascertain the



Fig. 3. Roentgenogram showing marked arteriosclerosis and calcareous degeneration of the ulnar artery in a man, aged 68.

cause of the arteriosclerosis. Case III is not unusual, for a man of seventy would normally have hardening of the arteries.

The changes in the arteries accompanying advanced years make arteriosclerosis a normal process in a man past sixty and in some cases earlier. As the years advance the size of the heart and the thickness of its walls usually diminish; occasionally, we find that the heart is enlarged owing to the resistance imposed upon it by congestion in the internal organs. The lining membrane has spots of atheromatous deposits and the free margins of the valves are thickened and hardened. The arteries themselves contain deposits of lime salts and fatty matter which deprive them of their proper elasticity and convert them into mere rigid tubes. The walls of the capillaries are thickened, which makes their diameter smaller. The pale skin of old age compared to the ruddy bloom of youth illustrates the fact that the narrowing of the lumen of the arteries causes a lack of nourishment of the parts, with consequent atrophy and degeneration.

The smaller capillaries impede the free passage of the blood from the arteries to the veins and the propelling force of the heart and arteries being deadened, the fluid accumulates in the veins, which as a result become distended and tortuous.

Because of the congestion of the internal organs, in particular the kidneys and liver, and because of this derangement of the natural balance of the circulation, the heart is forced to carry on additional work. If the heart action is too strong, it may cause rupture of the vessels and apoplexy. If the heart is weak there will be a resulting venous congestion, dropsical effusions and a general subcutaneous edema.

The sclerosed condition of the radial arteries makes it uncertain to depend upon the pulse at the wrist.

Always count the rate at the apex of the heart. It has been thought that as years advanced the pulse rate became less. This is not true, unless we are dealing with myocarditis. I recollect a man, aged eighty, who had a pulse rate of twenty per minute. This was due to myocarditis. It has been found that the average pulse rate past seventy years of age is about seventy-eight. A pulse rate of 120 in the aged is usually serious; however, sometimes with the aged the faster the pulse and the higher the fever the better the prognosis. This opinion is based upon the fact that normally the aged do not have fever and increased pulse rate and when they have there is a possibility that it denotes a stronger vitality, but this is not always true.

Premature arteriosclerosis aside from the usual pathologic causes, as syphilis, rheumatism, gout and plumbism, usually develops from a definite condition. From lack of care of the intestines or from indiscretions in diet, the portal circulation becomes somewhat congested, and, secondarily there is a congestion of the kidneys. This damming of the blood around the portal and renal circulation forces the heart to pump harder to get the blood through the increased resistance. As a result, if the process is continued, the second aortic sound becomes accentuated and the systolic blood pressure is increased. If this condition continues the heart increases its size in order to carry on the extra work and if this continues for a few years the kidneys, in contrast to the heart, decrease in size, which causes them to fail to perform their functions. The renal insufficiency comes as interstitial nephritis develops and in place of functional insufficiency, true uremia is present.

The heart is now enlarged, there is high blood pressure in the arteries, which walls have undergone sclerosis, and, in time, calcareous degeneration.

We see here the rôle played by the kidneys in the

production of arteriosclerosis. I believe that the arterial changes are in many cases secondary to the renal changes. Today we are attributing many things to arteriosclerosis and calcareous degeneration of the arteries and we do not realize that arteriosclerosis is a normal process of ageing and compatible with good health.

The symptoms said to be due to arteriosclerosis are usually due to nephritis and if we analyze the matter as the French physicians do we may find that nephritis was the first disease to appear.

After sixty years of age we normally develop hardening of the arteries and it should not be considered pathologic unless it develops in young persons. Nature, who produced these arterial changes, permits a function which is in harmony with the degeneration of other organs. Today, when a person of advancing years is ill, with various symptoms, the physician is ready to attribute it to arteriosclerosis and when he dies, hardening of the arteries is supposed to have caused death.

This pathologic arteriosclerosis should not be confused with the process due to normal senile arterial degeneration. The term atheroma is not a synonym of arteriosclerosis since it describes a fatty degeneration and is localized. A syphilitic aneurysm is in reality not a sclerosis of the aorta, but an actual softening—and not hardening—of the vessel. Fibrosis and calcification may be due to syphilis but usually the changes are due to gummatous softening. At the beginning of arterial degenerations there is a softening of the arteries before fibrosis and calcification take place. Therefore, we may feel an artery at the wrist and because it is soft say that it is normal, when in reality this is the incipency of an arterial fibrosis.

While arteriosclerosis is a normal change there are certain factors which hasten its development. In middle

age, syphilis, infectious diseases, rheumatism, gout and plumbism may tend to cause premature arterial changes. Roentgenologists are unquestionably prone to have pre-



Fig. 4. Left coronary artery. Advanced arteriosclerosis, from a case of fatal angina pectoris. Magnified 30 diameters. But little of the adventitia is shown. The media is thinned and at points encroached upon, but the most conspicuous change is in the intima, beneath the endothelial layer of which there has been extensive proliferation and leucocytic accumulation, most marked in the upper segment, greatly altering the lumen of the vessel, lessening its carrying capacity, and rendering it practically inelastic. There was a marked fibroid myocarditis in the area supplied by the vessel. (From Hare—*Practice of Medicine*.)

mature arteriosclerosis, and thyroid disease may also cause it.

I am convinced that the term cerebral arteriosclerosis

is used to cover a mass of ignorance in diagnosis. I have seen many of these cases with symptoms of a classical cerebral arteriosclerosis which were due to uremia or intestinal toxemia. The elimination of toxins by means of free catharsis will relieve many of the symptoms due to so-called arteriosclerosis of the vessels of the brain. Aged persons are apt to become toxic especially when inactive, and failure to discover this will cause us to attribute vague symptoms to arterial changes. The term arteriosclerosis is too often a loop-hole for a physician who is not able to make a diagnosis and in this case it is almost as unpardonable as to call a disease "old age." In persons past sixty we use the term because we are not interested enough to discover the cause of the symptoms.

Persons of advanced years, who have arteriosclerosis, sometimes have a series of symptoms which are described as classical. They have headaches, dizziness, loss of appetite, furred tongue, blurred vision, drowsiness to the extent of dozing in their chairs, weakness, symptoms of neurasthenia and psychasthenia. There is a change in the mental condition; they become irritable, sometimes cannot stand the sound of conversation or music, and become melancholic.

A woman, aged seventy, was taken suddenly ill, losing the use of her left arm. The next day she had regained its use.

A man, aged seventy-two, was affected with sudden lameness and loss of power in the right leg and was obliged to be taken home. The next day he had improved.

A man, aged sixty-five, suddenly became maniacal and said I was poisoning him with medicine. The family thought the mania was due to some drug that I was administering. In three or four days he had improved. About six months later he died of cerebral hemorrhage.

A woman, aged seventy, was taken ill suddenly, with loss of speech and mental confusion. She was very ill for several days, but recovered. It is now five years since that attack and she is in excellent health, able to travel, but has never regained her speech and cannot read or write since the attack. She can say three or four words and her daughters can understand some of the things she wishes. At times she becomes toxic, but free elimination through the emunctories usually relieves her in a few days.

This is a typical case due to cerebral arteriosclerosis but undoubtedly the attack was caused by cerebral congestion due to renal toxemia.

A man, aged sixty-two, was taken ill, had symptoms similar to those of cerebral hemorrhage. His legs were powerless, he was unconscious for three days and in deep coma. Treatment by hot packs and enemata improved the condition, and he lived in comparative comfort for a year.

A man, aged seventy-five, had attacks of mania which usually came when least expected. He was given laxatives and in a few days improved. This man has been an inspector of post-office construction and between the attacks maintained a normal mental state and was very keen in his judgment.

The cases described have been observed in old persons who had marked arteriosclerosis and the symptoms given could easily be attributed to this condition. It is very evident in such cases that the symptoms, while due to cerebral arteriosclerosis, were produced by a cerebral congestion, itself due to renal or intestinal toxemia. Many cases of cerebral arterial hardening have no symptoms until there is a systemic toxemia which causes congestion.

This applies to apoplexy. In the aged, a sudden loss of the use of a limb, an unconscious condition combined

with paralysis is commonly termed a "shock" or "slight shock." The layman is very apt to call any unconscious condition in the aged a "shock" and physicians equally apt to label these conditions apoplexy.

The more I study intoxications in the aged, the more convinced I am that true apoplexy is not as common as supposed and if cases are analyzed many times we will find uremia or intestinal toxemia to be the cause of this condition. This has been proved several times where active treatment of the toxemia has been instituted and the old patient has recovered and returned to work with his usual vigor. This type of case could not be called apoplexy. Uremia may be localized in one organ. Thus we may have renal uremia, gastric uremia and cerebral uremia. Cerebral uremia is very similar in its manifestations to apoplexy and it is often difficult to clear the diagnosis. On an eliminative treatment the condition will usually improve if due to uremia.

It is a mistake in therapeutics to attempt to cure senile arteriosclerosis. The iodides are unnecessary and may cause harm to the stomach, moreover, they are very irritating to the kidneys. I have seen better results due to a treatment of free elimination through the kidneys, bowels and skin than from the use of nitrites. I fail to see any great advantage in lowering the blood pressure by the continued use of the nitrites, unless attention is given to the underlying cause.

Free catharsis is by means of a saline and potassium bitartrate to increase elimination through the kidneys, and if the patient is in coma a hot pack or enema will be of benefit. Hot packs are dangerous to the aged and should be used only when there is coma. The skin does not respond readily to the heat and it is difficult to start perspiration; hot packs are advisable, however, in some instances.

In summarizing, I would say, relieve the system of

its toxins, restrict the diet, and disregard arteriosclerosis as far as therapeutics is concerned, unless in a younger person where there is a clear indication for a specific remedy.

CHAPTER XIV

SENILE HEART DISEASE

The heart undergoes senile degenerations like all other viscera, but while most organs become atrophied, it is usually hypertrophied in old age. One of the earliest indications of the onset of senility is the change which takes place in the circulatory system and we must not overlook the fact that it is a normal senile change. Beginning with hyperplasia of the connective tissue of the intima of the arteries, there is a thickening of the inner coat, and, therefore, a diminution of the caliber of the vessels. The elastic fibers waste and the deposits of calcareous salts deprive the vessels of their proper elasticity, changing them into rigid tubes. These changes affect the vasa vasorum and as a result the nutrition of the larger vessels is impaired and they degenerate. Later the outer coats of the arteries become hardened, calcareous deposits are found in the inner and middle coats and the entire vessel becomes calcified, less blood reaches the organs and atrophy begins. In old age the heart is called upon to do more work, if it is strong there will probably be no apparent deviation from the state of health except possibly hemorrhoids or varicose veins. If the heart is too strong, the smaller arteries, especially those of the brain, may rupture, and apoplexy occurs; if the heart is weak, we find dropsical effusions and various venous congestions.

The normal senile heart is somewhat dilated and hypertrophied. The capacity of the heart increases with the hypertrophy. Pic and Bonnamour note that the

capacity of the adult heart is 254 cubic centimeters for the male and 220 cubic centimeters for the female, changing to 277 cubic centimeters in the male and 299 cubic centimeters for the female, in old age. The orifices of the heart become larger in advanced life. Hasse observed: "the progressive enlargement of the two auriculo-ventricular orifices is tolerably uniform; that of the two arterial mouths differ; both increase equally until the meridian of life, but the aortic orifice enlarges more rapidly in advanced age than that of the pulmonary artery, so that in old persons the latter is even narrower than the aorta." The valves are usually changed in advanced life and it is possible to have considerable insufficiency of the aortic valve which does not give rise to symptoms.

One of the most common causes of cardiac hypertrophy is Bright's disease, which is usually accompanied by enlargement and dilatation of the heart. It is difficult to state whether the heart lesion is the cause of nephritis, or whether Bright's disease causes the cardiac affection. Potain states: "in a fair number of cases it is clear that the nephritis is primary, and the hypertrophy of the heart is secondary." Charcot believed that the cardiac enlargement was a result of the kidney lesions. In some cases of senile nephritis the heart may be normal in size and have every appearance of health, yet histologic examination might reveal arteriosclerotic lesions. The hypertrophy usually affects the left ventricle. There may be accompanying endocarditis and dilatation is frequently observed.

In all events, nephritis causes additional work of the heart and the organ usually enlarges to carry on its extra work. The resulting changes in the valves and orifices, which, should they occur in earlier life would seem to indicate serious disease, may, in old age, cause little trouble. Frequently, we examine the senile heart

and hear loud murmurs, observe signs of abnormality, yet the patient is practically well.

Syphilis of the heart, first described by Virchow in 1859, is more common than we realize, occurring about ten years after the primary infection, and may be a cause of cardiac lesions in old age. I have seen several cases of senile syphilitic lesions of the heart and when specific treatment is instituted we often see a disappearance of the symptoms. A man of 60 was infected with syphilis forty years ago and had no symptoms after the treatment he had taken. He recently had symptoms of myocarditis,—arrythmia, dyspnea, anasarca and cachexia. All remedies failed to relieve him until sajodin, eight grains, four times a day, was given, which caused the symptoms to disappear.

The condition is syphilitic gummata in the heart and the myocardium is usually affected. There may be fibrosis of the heart due to syphilis. In these cases potassium iodide or injections of gray oil, one grain, should be used.

When a muscle has increased work to perform it undergoes hypertrophy, this general rule applies to the senile heart. In advanced age the heart sometimes undergoes hypertrophy as a result of normal senile changes. In other instances, the hypertrophy may be due to valvular lesions of the heart, which may exist for several years. Chronic aortitis, aneurysm, chronic diseases of the lungs and diseases of the liver will produce cardiac hypertrophy.

Senile myofibrosis, commonly called myocarditis, is a degenerative change of the myocardium which may be a result of ordinary degeneration or may be due to infectious diseases in earlier life which have affected the myocardium. Influenza is a common cause of the condition, even in old age, this severe infection may bring on myocarditis. Bright's disease and myofibrosis are

commonly seen together, but it is difficult to determine whether one disease is the cause of the other. I have seen these conditions combined; in one case I observed that when the heart began to fail, the kidneys showed signs of insufficiency. Another patient, who had nephritis, developed myofibrosis several years later, but in this case gout probably was a contributing cause of both conditions. Tuberculosis may cause myocarditis, but it is usually seen in patients who developed this infection earlier in life. It may, or may not, give rise to symptoms and is often detected only at postmortem examination. Sclerosis of the myocardium or cardio-sclerosis may be a form of the general senile degeneration.

The symptoms of myocarditis are dyspnea, sometimes accompanying the slightest exertion, and occasionally assuming the Cheyne-Stokes' type; palpitation, arrhythmia, and sensation of constriction in the chest, with pain in the mediastinum. It is often difficult to make a diagnosis of myofibrosis or chronic myocarditis and we must depend a great deal upon the history of the case. Heart lesions following influenza or caused by rheumatism or gout are apt to be myocarditis; a positive Wassermann reaction would give a diagnosis of syphilitic myocarditis. In cases of myocarditis there are periods in which the heart is fairly strong, while in fatty degeneration there is most often continued weakness of the heart action. I saw a man of eighty, who had chronic myocarditis, with dyspnea, cyanosis, weak and irregular pulse, and, later, edema of the lower limbs. Diuretin quickly relieved him and he lived two years without much discomfort.

In private practice one finds many cases of heart disease, but it is often difficult to diagnose the type of lesion. Many times physical examination reveals an abnormality, yet the patient presents no symptoms.

Ten years ago I examined a man of sixty-five and found a loud mitral murmur at the apex, but it did not cause trouble until recently, when the heart showed signs of weakening. Dyspnea was so severe that he could not sleep at night; he had edema of the lower limbs; the pulse was rapid and irregular and the kidneys, which were previously healthy, showed signs of insufficiency. Although he had had that heart lesion for ten years, he was able to work hard.

In old age the pulse does not give us much indication of the seriousness of the cardiac lesion since arteriosclerosis of the radial arteries affects the rate and quality of the pulse. Day found that in 562 healthy women whose average age was seventy-three the average number of pulsations was a fraction above 73 per minute; and that the average pulse of 197 healthy men of the average age of sixty-eight years was 72.5. It is necessary to count the heart rate at the apex. As a rule we cannot depend upon physical examination of the heart to give us much information from a prognostic standpoint. One fact seems certain, that is: the senile heart stands much use and abuse, and we must try to lessen the amount of work it has to perform.

In most cases of heart disease, where the symptoms are few, proper hygienic measures will suffice to relieve the condition. The treatment of these affections, in most instances, seems to be of a mechanical nature. A horse has a heavy load to carry and becomes fatigued, if we lighten the load, we enable the animal to continue the journey. If the heart has become degenerated, as long as there is normal interrelation of the degenerated organs, it is able to take care of its work. If any of the organs become congested, as for instance, the kidneys, this throws additional work on the heart, and broken compensation results.

The "Effort Syndrome" or neurovascular asthenia, is

a common condition in old age. It is said by some observers to be the result of an insufficiency of the pituitary gland, and, possibly of the lack of other internal secretions. In many of these cardioasthenic conditions the administration of a total extract of the pituitary gland or suprarenal extract will give excellent results. In certain cases of bronchial asthma, these extracts will be of benefit. It is well to begin with small doses, every three hours, later increasing the dose. If the blood pressure is high, if nephritis is present or marked arteriosclerosis, these total extracts should not be used, but the anterior pituitary substituted.

A patient who has cardiac hypertrophy (which is secondary to nephritis) suffering from dyspnea, palpitation, edema of the lower limbs, precordial pain, and who is perhaps uremic, should be placed on a milk diet, a saline laxative prescribed and a tablespoonful of Trousseau's diuretic wine should be taken morning and night. In many cases the following prescription is of benefit:

R

Diuretin 3 ij

Aquae Cinnamomi q. s. ad. 3 ij

Sig: Teaspoonful in $\frac{1}{2}$ wineglass of water every three hours.

Usually after a few doses of diuretin, there will be marked diuresis, dyspnea will be lessened and in a few days the edema will go down. This preparation can be continued for several days, but it is well to discontinue its use after forty-eight hours. Diuretin seems to act well only in patients who have edema of the lower extremity. If it is the upper extremity, compound tincture of jalap, from the French codex, in doses of one-half ounce at bedtime, will give good results. When the patient has improved, we may prescribe pills of renal extract, 25 centigrams being given four to eight times a day; or we may give 10 centigrams each day, hypodermically. Renal extract, by improving the kidney con-

dition, lessens the work of the heart. In some cases of myocarditis, the extract of myocardium will have a beneficial action, 25 centigrams being given from two to six times a day. Many cases of nephritis, associated with heart lesions, improve on thyroid extract. It is well to begin with small doses of this extract and follow its action carefully.

At times, strychnine works favorably and I have patients who have taken $\frac{1}{60}$ grain three or four times a day for several months. Sometimes if there is prostration, and yet no kidney involvement, I give them two grains of quinine sulphate and $\frac{1}{60}$ grain of strychnine sulphate every three hours, which seems to tide them over the dangerous period.

It is surprising to see how many combinations of remedies some physicians will employ in heart diseases; I have seen one prescribe nitroglycerin, strychnine, caffeine and oil of camphor hypodermically, at the same time. The secret in treating heart disease is not to force the heart, but to lessen the peripheral resistance. This is the best means of stimulating the heart we have. After all, it is not necessary to employ many heart remedies except in certain instances. Milk diet, diuretics, saline laxatives and rest will sometimes be all that is necessary.

Some cases will be relieved by digitalis, but usually small doses will suffice. Digitalis is an uncertain remedy in old age and as a rule does not work well. If the pulse is irregular, sparteine sulphate, $\frac{1}{40}$ grain, may be given every three hours. In cases of high blood pressure, and when there is acute pain in the precordial region and in the left arm, nitroglycerin, grain $\frac{1}{100}$, every two or three hours may be of benefit. Sometimes the headache following its use is intense and lasts several hours. At times a mustard paste over the apex region will be of benefit when there is faintness and pain in the heart.

Alcohol in its full physiological effect will sometimes be of value.

If there is evidence of syphilis, we should use daily injections of gray oil, one grain, and potassium iodide internally. Arsenobenzol is to be preferred.

Diseases of the heart which depend upon vascular or muscular changes require a treatment different from that of simple valvular disease, which is usually relieved by digitalis. Patients must avoid anything which produces a strain of any kind and the activity must be entirely in proportion to the strength they possess. Excitement should be avoided especially that of a sexual nature. Old men who marry young women usually pay the penalty because sexual excesses in the aged cause or aggravate heart disease. Old persons with heart disease should avoid rapid walks, or climbing stairs. Prolonged mental or physical exertion has a bad effect. Life in general should be as calm as possible and in hospitals old patients should not be in contact with patients who are seriously ill or dying. Tobacco, although not advisable, should be continued if the old man has been accustomed to its use for several years. Great care should be taken of slight catarrhal infections and old patients should avoid contact with those who have influenza, since the latter disease is often fatal in old age. If possible, the patient should avoid a climate which is subject to sudden changes of temperature. As a rule high altitudes are harmful. The climate of Southern California is excellent for cardiac patients. In winter they should be reasonably far from the sea shore and in summer, away from the fumes of cities; the country should be sought.

The Schott, Nauheim and Oertel treatments are usually contraindicated in old age. A certain amount of exercise, however, is necessary, but the patient should never reach the point of fatigue.

Great care should be given to the emunctories, especially the kidneys, and a nephritic diet should be prescribed in most instances. The bowels should be well regulated; baths should be taken each day and in some cases the patient will find that sponging his chest daily with cold water, and rubbing it with a Turkish towel relieves him. Overeating should be avoided and the evening meal should be light. In the diet it is advisable to have as little sodium chloride as possible.

Heart disease with arterial hypertension demands the same treatment as that described for the renal heart complication. As in cardiopathies the kidneys are usually affected, we must not follow the common custom of using the iodides for arteriosclerosis because it may produce renal irritation.

In cases of hypotension we must use other remedies, particularly strychnine, sparteine or suprarenal extract. It is possible to combine the two former remedies for hypodermic use as in the following tablets:

Strychnine Sulphate	$\frac{1}{60}$ grain
Sparteine Sulphate	$\frac{1}{40}$ grain

Strophanthin may also be used. German observers have called attention to the use of very small doses of digitalis in these conditions, but on account of its cumulative effect it is not to be employed as a routine remedy. Digitalan is a reliable preparation to use.

I have seen several cases of cardiac attacks in old age which seemed almost certain cases of acute gastritis. The suffering was intense, severe pain in the region of the stomach, in one case I gave morphine hypodermically and the patient died a few moments afterward. We must be on our guard in these cases of apparent indigestion, which are in reality heart or kidney affections. "Acute indigestion," so commonly spoken of as a cause of death, is most often acute gastritis of cardiac or renal origin.

Neuralgia of the heart is not so painful as angina pectoris, and is usually associated with palpitation and arrhythmia. I remember a man of sixty, who had a pain over the apex region. I was unable to detect any disease of the heart. Blood pressure was normal and the kidneys were not affected. I called upon him one evening and found him in good spirits, he was apparently in good health, except a mild pain over the heart region. I left for my office and when I arrived there found a telephone message that he was dead. We should give a cautious prognosis in the so-called functional diseases of the heart. Palpitation may be due to indigestion, but many times we find that these cases quickly become fatal. A man of seventy had palpitation; he was sitting in a chair and it did not seem necessary to make a careful examination because he was apparently not ill. However, examination revealed an extremely rapid heart action, the pulse being over 160 a minute. Usually a pulse rate of 160 is fatal. He recovered from this attack and was able to work again. As he had diarrhea for several years and the bowels were checked, I believe this sudden checking of the excretion was the cause of the trouble, which was relieved as soon as the bowels were freely opened again. I treated a woman of seventy, who had attacks of angina pectoris for several years. Her systolic blood pressure was 220 and diastolic 130, and she had senile nephritis. The attacks came only at night and death seemed impending. I prescribed 1/100 grain nitroglycerin by mouth and it brought relief for every attack for three years. Diathermia will relieve some cases of angina pectoris. As the disease is often associated with nephritis, we should treat the latter disease, thereby relieving the heart of its additional work.

In conclusion, the treatment of most heart affections in the aged is rest and consists in lessening the peripheral resistance, which diminishes the amount of work the heart has to do.

CHAPTER XV

SENILE NEPHRITIS

CASE I.—A man, aged seventy, lost his position in a factory, and as a result became despondent and began to drink. He gradually became weak, complained of headaches, dizziness, loss of appetite, and had difficulty in urination. He often cried, and the sound of music and laughter caused a severe pain in his head. He contrived against his family, saying that he was badly treated and would not eat at home, but went to a restaurant to give the impression that he was not treated well by his family.

One night his family heard a noise in his room, the old man had fallen on the floor and was having a convulsion. He was given ether, but during the course of the morning had several severe attacks. He was unconscious; the right side of his face was drawn and the left arm and leg paralyzed. There was a general subcutaneous edema. A diagnosis of uremia was made and he was given hot packs. For four days he remained unconscious, but in the course of a few days regained consciousness, free elimination through the emunctories relieved him, he gradually recovered the use of his arm and leg. For several days it was necessary to catheterize him. In about a month he was able to go out. It is now three years since the attack occurred and the man is able to do a hard day's work and is in better health than he has been for years.

CASE II.—A woman, aged seventy-three, was extremely nervous. She appeared as a child with St. Vitus' dance. The urine showed the presence of blood and granular

casts. Extract of pigs' kidney apparently improved her condition.

CASE III.—A man, aged sixty, of the physically frail type, consulted me for dizziness and indigestion. The cause was interstitial nephritis, and he had several severe attacks. In this type of nephritis a person may be very ill, but not show it in his general appearance. The presence of blood, granular casts, some of them containing blood gave a guarded prognosis. He was given the dried extract of pigs' kidney and improved.

CASE IV.—A man, aged seventy-four, was taken ill, with cardiac weakness. He then developed facial paralysis and persistent hiccough. The urine showed many hyaline casts but there were no other symptoms of nephritis. I ordered free catharsis and absolutely starved him for two weeks. He was not given a drop of water or anything else. This relieved the persistent hiccough.

The old man apparently gained on this treatment, and starvation instead of producing weakness, seemed to make him feel better. When irritability of the stomach disappeared he was given champagne, and peptonized milk. He gradually gained, and today is working with a great deal of comfort.

CASE V.—I once saw an invalid woman who had tried many different treatments. She could not move without experiencing faintness. She had taken treatments for her heart, but was in such a condition that she could not get out of bed. The aortic second sound was accentuated. Carefully questioned she revealed that she had the minor symptoms of Brightism, such as cramps in the calves of the legs, itching of the skin, nocturnal micturition, sensation of electric shock on lying down, sensitiveness to cold, dead fingers and dead legs.

The urine showed numerous granular casts. Un-

doubtedly the heart was overworking to force the blood through the congested kidneys. The use of the extract of pigs' kidney, together with free elimination, produced excellent results.

CASE VI.—A retired business man, aged sixty-eight, consulted me for difficulty in urination. He said that he had lost his "grip," and appeared despondent and childish. He was melancholic, and his family annoyed him very much. He complained that they did not want him and abused him. His condition was entirely due to chronic uremia, and on eliminative treatment he improved. As a result of the elimination of toxins his mental depression entirely disappeared.

CASE VII.—A man, aged sixty-three, has been under my care for five years for chronic interstitial nephritis. The urine showed casts and albumin. For the past year he has apparently been well, and the use of the dried powder extracted from the kidney of a pig freed his urine from any discoverable abnormality.

He recently lost the sight of his right eye, through retinal hemorrhage, undoubtedly due to nephritis, although the urine does not show any abnormality in the sediment at present.

These cases are typical examples of chronic renal toxemia. It will be noted that in some of them the mental state, often ascribed to "old age," or childishness, etc., disappears when proper attention is given to the elimination of toxins. Intestinal toxemia will often indicate the beginning of nephritis, but it may also develop during the course of the disease.

The kidneys, in modern life, perform the greater part of the daily elimination. These small organs are constantly working, the majority of people neglecting to make the bowels and skin do their proper share in the elimination of waste. As a result of our overeating of

excessive amounts of nitrogenous foods, and irritating, volatile substances like mustard, horse-radish, etc., the kidneys are not only irritated but overworked.

Naturally, the result is that they are the first organs to weaken, and instead of enlarging in order to carry on their extra work, they usually become smaller or con-

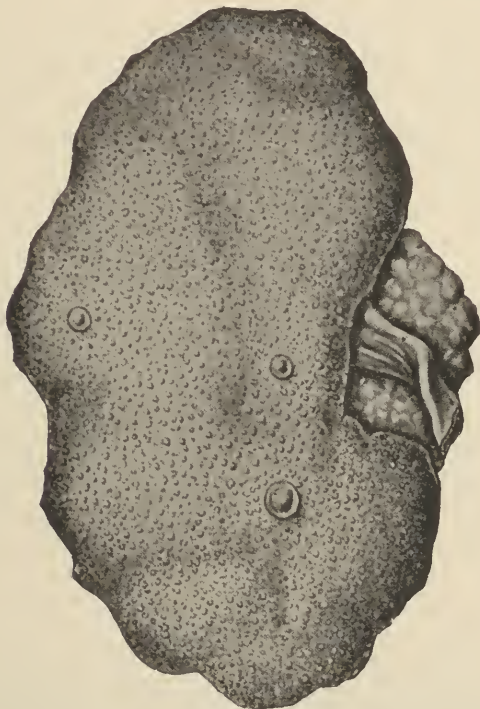


Fig. 5. Kidney of chronic interstitial nephritis. The surface is granular and irregular, and contains numerous cysts. The contraction is quite marked, the organ being but little more than half the normal size. (From Hare—*Practice of Medicine*.)

tracted. Then the heart is forced to pump harder to get the blood through the congested organs, owing to this increased resistance in the renal blood vessels. This condition continues, and, consequently, produces first a hypertension; next, a hardening of the arteries, and finally hypertrophy of the heart.

Because of the lack of more precise methods of diagnosis, the presence of chronic interstitial nephritis, in many cases, is only discovered on postmortem examination. The microscope and chemical tests will not always answer. Sometimes when the kidneys are in bad condition the microscope will not reveal it until several examinations have been made.

Nephritis may be due to syphilis,¹ and the diagnosis is made from the clinical aspect because the urine does not show any evidence of abnormality until several weeks after the onset of the attack. Also in Case VII the retinitis developed when the urine was apparently free from abnormality and when the systolic blood pressure was 150.

The more civilized we become the more apt we are to develop diseases like nephritis and cancer. Peoples of the Far East, who live on farinaceous and vegetable foods, rarely have these diseases. The lay press often attributes death to "hardening of the arteries," "heart failure" and "acute indigestion." The vast majority of these cases are due to chronic Bright's disease. Arteriosclerosis is not a disease; in fact, it is a normal process of advancing years.

Symptomatology

Chronic nephritis in the aged differs from that of younger individuals. The ordinary symptoms, like headaches and edema, are usually absent. There is a certain kidney degeneration which is normal in the process of ageing, and this degeneration attacks all organs, one of the miracles of Nature is the function which these weakened organs will perform. If the harmony is broken, however, some organ like the kidney will break down more rapidly than the others. It is then the symptoms

¹ American Journal of Clinical Medicine, August, 1916, p. 676.

of broken renal compensation arise just as those of lost compensation in the case of heart disease.

The first symptom of nephritis will often be a languid feeling. There is mental depression and a general evidence of intoxication. The face is flushed at night, the tongue coated and the odor of the breath noticeable. The temporal artery is tortuous and pulsation visible, and the radial pulse is full and bounding. The patient complains of cramps in the calves of the legs, dead fingers, cold legs, shortness of breath and drowsiness. The old man sleeps in his chair during the day and complains that he cannot sleep at night. He may contrive against his best friends and tell others that he is abused at home. He loses his sense of cleanliness, will not bathe himself properly, and may resort to habits that are very unclean; he is unlike his former self.

In the male usually there is difficulty in urination, due to prostatic congestion. Senile rheumatism is frequently a manifestation of senile nephritis, and is due to renal toxemia. Sciatica and lumbago are sometimes symptoms, and oftentimes chronic indigestion is caused by nephritis.

Diagnosis

The presence of casts, albumin and blood, together with the minor symptoms of Brightism, will clear the diagnosis. The symptoms of toxemia must be traced to ascertain whether the condition is due to some other disease. I have seen several cases of pyelitis in the aged that were secondary to cancer of the colon. The pyelitis may cause symptoms of Brightism, but in these cases the possibility of cancer of the colon must be eliminated.

Occasionally, I have seen nephritis accompanying prostatic hypertrophy, both of which were due to syph-

ilis. At times senile diabetes will be accompanied by nephritis, and it is only by a study of the minor symptoms that one can detect the disease which is the most important from a therapeutic standpoint.

In comatose patients it is impossible to make a diagnosis of nephritis, because any patient in a coma, no matter the cause, will usually have glycosuria, albuminuria and casts.

Prognosis

A little care and attention to senile patients will produce excellent results in many cases, make them infinitely more comfortable and in many instances add several years to their lives. If there is blood in the urine we should give a guarded prognosis. These patients with interstitial nephritis, who have blood casts, will suddenly become ill, show every symptom of pneumonia and run a course similar to that of pneumonia. They rarely recover. I have seen many cases of apparent senile pneumonia which I am sure were an acute exacerbation of chronic nephritis. This is my conclusion, because these individual cases I had followed for several years had chronic nephritis.

Whenever sugar is found, together with casts and blood, convalescence is certain to be protracted.

Treatment

The issuance of a strict diet to an aged person is usually a very distressing and disagreeable punishment. Most of these old patients were accustomed to coarse food in their younger days, and to change their mode of living might bring disastrous results.

Although they live on coarse food, such as pork, red meats, food rich in nitrogen, I usually give them the

liberty to eat anything they wish. The old man was taught in his younger days that "food gives strength," and to lose his appetite he thinks means approaching death. If a diet is ordered for him, it will usually cause mental depression and loss of appetite. Moreover, most of these diets are constipating. As a rule non-restriction works best in most cases. However, this does not refer to acute nephritis, when there is blood in the urine. If patients suffering from it are not ill in bed, it is better to give them milk, cereals, and light vegetables. If acutely ill and in bed, the absolute milk diet is indispensable in some cases, as in Case IV, absolute starvation is the only treatment. This is because the organs are exhausted and not able to take care of any food or liquid.

Free catharsis is essential, by means of a saline each morning if the patient is corpulent, and a pill like the compound cathartic for one who is physically frail. Salines are too depleting for thin individuals.

Cases due to syphilis will usually yield to ordinary treatment, and seldom have I been obliged to resort to arsenobenzol for this particular condition in the aged. Remedies other than mercury or arsenic will give better results in a few selected cases of syphilis.

In some instances, especially in corpulent patients, and in those who suffer from intense headache, cabinet baths, either with an ordinary bath cabinet or electric light bath, will sometimes give good results. The skin of an aged person is usually dry, and it is difficult to start perspiration. To give cabinet baths to aged patients requires great care, and the physician must select his cases.

The elixir of iron, quinine and strychnine phosphates, now unofficial, will usually work well as a tonic after the eliminative treatment. However, the return of strength will be automatic as the toxins are eliminated. It is

necessary to stimulate the aged, therefore strychnine is indicated.

The matter of changing an old man's habits is important and should be carefully considered. I do not change his mode of living in any way, even allowing him the usual amount of liquors that he is in the habit of taking. A habit which has been for years the pleasure of an old man should not be suppressed.

In Case I it will be remembered that the illness developed after the old man had left his position. This is an important matter, and the best treatment for aged persons, when possible, is to keep them out of bed and at work. Even in cases of serious illness I feel that on several occasions I have seen aged people saved by getting them out of bed, no matter how ill they were. Even with senile pneumonia or senile bronchitis, if possible, they should be kept in a chair. Keep old persons in bed, and the chances are that they will not get up again. To allow them out of bed encourages them. The bed means to them "old age," which, in turn, means approaching death.

This treatment of nephritis by means of elimination, therapeutic agents, and finally work seems the best means of doing away with many of the symptoms that will ordinarily be attributed to old age and childishness. The toxins in many instances produce the so-called senile mental state.

In the chapter on Opothrapy, I have mentioned the use of animal extracts in the treatment of senile nephritis. In women, nephritis often begins at the menopause, blood pressure increases and if the condition is not treated becomes chronic. Oftentimes we find women increasing in weight at this period of life, and many of the symptoms attributed to the climacteric are in reality due to nephritis, associated with increased blood pressure.

The urine should be examined and blood pressure recorded in every woman at this time of life and attention given to every abnormality. In looking over my records I find several women who showed evidences of changes ten years ago at the menopause, and observe that many who have not continued treatment now have chronic nephritis with arterial hypertension.

At the menopause there are changes in the endocrine glands and the diminution in the amount of ovarian or thyroid secretions will apparently cause nephritis. Ovarian extract will sometimes improve the kidney affection, which is most often associated with hypothyroidism. The internal use of thyroid extract seems to quickly check the renal irritation, many of the distressing symptoms will disappear, the weight will decrease and the blood pressure will become lower. It is necessary to begin with small doses and watch the reaction. Sometimes the use of thyroid will, the first time, make the patient ill, but when it is resumed it will be effective. I feel sure that many cases of senile nephritis in women can apparently be cured by the use of thyroid extract. Sometimes thyroid extract and renal extract have a good effect when combined. The use of renal extract in senile nephritis gives excellent results in many cases.

In men, we sometimes find that thyroid extract will improve the condition of the kidneys, in many cases the blood pressure will fall, and the heart will improve. The rôle played by the thyroid gland in nephritis is an important one and deserves great attention. In the cases where I have used it with success, I have checked the apparent improvement by careful urinalysis and noted that a few days after the thyroid extract was given, there was a marked diminution in the amount of albumin and in the number of casts. It is difficult to determine whether hypothyroidism is the cause of the kidney involvement, but if we note any signs of thyroid insuf-

ficiency we are justified in resorting to opodiagnosis, or the use of thyroid extract, awaiting its therapeutic action.

In other cases, there is a lack of secretion from the pituitary gland with the thyroid deficiency and the two extracts combined will improve the kidney condition. The following combination will benefit these cases.

$\frac{1}{8}$ gr. desiccated thyroid
 $\frac{1}{20}$ gr. entire pituitary
 $\frac{1}{2}$ gr. ovarian extract

These tablets should be given three times a day, after meals. If the blood pressure is high, the anterior pituitary substance should be used without the posterior pituitary. It is often necessary to combine pituitary with thyroid extract.

CHAPTER XVI

THE COMPLICATIONS OF SENILE NEPHRITIS

Senile nephritis is one of the most treacherous conditions we are called upon to treat, because there are many complications that develop in organs which are distant from the kidneys, while the latter organs frequently display little evidence of disease. In other words, we may find serious symptoms, for example, in the brain, due to uremia, yet the urinary picture may not be serious.

The causes of the complications can usually be grouped under the headings (1) increase in blood pressure due to kidney disease; (2) toxins from the diseased kidneys affecting other organs, and (3) cardiac complications of an overworked heart, due to renal disease. One of the first symptoms of senile nephritis is an accentuated aortic second sound. The kidneys become slightly congested and the heart is obliged to work harder to force the blood through the renal arteries, which results in an increase in blood pressure. In the course of time arteriosclerosis develops, and the heart usually enlarges to carry on its additional work. On the contrary, the kidneys usually become smaller; that is, show the interstitial form of the disease, and because these organs are unable to functionate properly, uremia develops, which may be of the acute or chronic type. In old age we find the chronic form of uremia a very insidious disease, capable of causing many vague symptoms which are difficult to diagnose, the difficulty not always arising from the symptoms alone, because often we are sure that chronic uremia is in the background of paralysis of the arm, but urinary examination, even of the micro-

scopic sediment, may reveal nothing of interest. This is the treacherous rôle contracted kidneys play in disease; on some days urinary examination is negative and at other times it is positive, and in a great many instances interstitial nephritis is discovered only at the postmortem examination.

There are a few clinical symptoms that are of great value in determining the presence of senile nephritis. With these symptoms and a negative urinary examination we are almost certain that nephritis is present, and a urinary examination should be made daily for several days, repeatedly centrifuging the urine as the microscopic test is the most important. The minor symptoms described by Dieulafoy as indicative of nephritis are: dead fingers, cramps in the calves of the legs, tortuous temporal arteries, sensation of electric shock on lying down, deafness, sensitiveness to cold and nocturnal micturition. I will now treat upon these minor symptoms.

Dead Fingers.—This is one of the first symptoms present, but the patient does not usually mention it to the physician; on the other hand, if questioned he may not understand to what you refer. I have had many senile patients tell me that they never had “dead fingers,” but have had a numbness in the fingers. Very frequently they will deny having numbness, but will confess to having a prickly sensation in the fingers. It may not affect all fingers, and may be on one hand only, or one finger only; it usually affects the last joint, and at times the numbness is so severe that the patient cannot use his fingers. It is undoubtedly due to the effect of urea on the nerves of the arm.

Muscular Cramps.—Cramps in the calves of the legs which usually come at night; they awaken the patient and may be very severe. The patients state that the muscles actually tie themselves in a knot. An old Indian

told me that his tribe used a rattlesnake skin tied above the knee every night to cure these cramps. Another "cure" these Indians had for the muscular cramps was to place the shoes, soles up, under the bed before retiring. It is strange to hear the actual "cures" they believe to be the result of these measures.

Tortuous Temporal Artery.—A tortuous temporal artery, called by the French the "sign of the temporal artery," is by no means always abnormal. There are many persons who have this tortuosity of the artery, even with visible pulsations, which does not indicate disease. These symptoms alone do not mean a great deal, but when combined are of great value in determining a diagnosis.

Electric Shocks on Lying Down.—This peculiar symptom is a sensation similar to that of grasping an electric battery and usually comes at night when the patient is lying down; it is very disagreeable. I have seen it in a few cases of senile nephritis, but more constantly found it associated with uremias of pregnancy. However, in the interstitial form of the disease it may be seen in old age, but the symptom is so peculiar that the patient does not know how to describe it, and it is only when you carefully explain it that he recognizes to what you refer. Patients have different ways of expressing symptoms and it is well to question them carefully.

Sensitiveness to Cold.—A person suffering from interstitial nephritis is usually very sensitive to cold. He does not realize it until he is questioned, but when his attention is called to it, this becomes quite evident. The patient finds that he is obliged to wear heavier clothing and requires more bed-clothes than the average person. The sensation of cold is sometimes evidenced not only by coldness in the limbs, but patients feel at times as if their legs were paralyzed.

Deafness and Buzzing in the Ears.—Frequently there

is a buzzing in the ears which may become very severe and cause great annoyance. Again, as a result of nephritis we may get temporary deafness, lasting but an hour or two. Some of the older physicians believed that chronic nephritis often caused deafness, and I am of the opinion that a great many cases of deafness are indeed produced by that disease. At any rate, I have seen many cases of deafness which improved when nephritis was treated, with a resulting lessened toxemia and lowered blood pressure. As the toxemia lessened the severe buzzing in the ears ceased. I recollect a man, aged sixty-five, who consulted me for a catarrhal condition of the nose and sinuses. He had severe ringing in the ears, chronic rhinitis and severe pain in the occipital region, accompanied by deafness. Physical examination revealed that he had chronic nephritis; his systolic pressure registered 230. He was given a saline laxative each morning and a diet of milk and cereals was prescribed, upon which his condition gradually improved, in the course of time his blood pressure dropped to 180. His catarrhal condition and deafness were greatly improved and his general health became much better. I have seen many cases in which an improvement in the condition of the kidneys produced corresponding improvement of the hearing.

Nocturnal Micturition.—The patient rises several times during the night to urinate, there may be a large or small amount at each urination; this may be associated with dysuria. A great many senile patients who suffer from this disturbance find that getting up on a cold floor at night causes the urine to start with difficulty.

These minor symptoms of Brightism may not only be complications, but are a part of the early manifestations of the disease. Many times, when these symptoms were combined, I made a presumptive diagnosis of nephritis, and usually it was corroborated by repeated urinalysis.

One or two symptoms are not significant, but when they are combined they are as a rule very important. I remember finding these symptoms in a woman of fifty, and felt sure that she was suffering from nephritis. Urinalysis revealed that she had suffered from chronic nephritis, but after several months I found that nephritis was secondary to cancer of the liver.

I shall now refer to several of the complications of nephritis, not taking them up in systematic order, but as they occurred most frequently in my practice. It is possible to have localized uremia without general manifestations of renal disease. For example, we may have gastric uremia, cerebral uremia, renal uremia, etc.

Indigestion.—This is a very frequent complication of nephritis and many obscure cases of so-called indigestion are due to an underlying kidney disease. Renal gastritis or gastric uremia may manifest themselves in many ways. There may be simple indigestion or distress after eating; the patient may have persistent hic-cough, nausea and vomiting, or gastritis similar to that seen in alcoholics. Commonly it is the ordinary form of indigestion, or distress after eating, and there may be no other symptom of nephritis. However, the condition is corrected only by attention to the renal disorder.

Gastrointestinal Disorders.—I have frequently had patients who suffered from spasmodic pains in the intestines which were very severe at times, simulating appendicitis or the crises of locomotor ataxia, and who often required $\frac{1}{2}$ grain of morphine for relief. Again, many forms of diarrhea are caused by Nature's method of elimination of toxins, or compensatory elimination because the kidneys are diseased. Diarrhea may be associated with severe pain and is best treated by attention to the kidney disturbance.

Neuritis and Neuralgia.—Although this is not a common cause, tic douloureux is occasionally due to chronic

nephritis. More frequently we find neuritis of the arm as a result of nephritis; lumbago and sciatica are often due to this disease and improve when attention is directed to the kidneys.

Cerebral Uremia.—This condition is manifested by headaches, drowsiness, dizziness, delirium, melancholia or mania. A person suffering from cerebral uremia may suddenly lose the use of an arm or leg during a few hours. Again, a man may suddenly develop mania which takes the form of believing some one is persecuting him, for instance, attempting to poison him. Mania may last from a few hours to a few days with complete restoration to the normal, or it may become permanent. Occasionally, a person will lose the power of speech for an hour or two; these symptoms are partly due to toxemia and partly to the secondary congestion caused by increased blood pressure. Many symptoms commonly attributed to cerebral arteriosclerosis are due to cerebral uremia. When we have symptoms pointing to the brain alone, we must not forget the fact that uremia may be localized in one organ without general symptoms.

Renal Uremia.—Strange as it may seem, it is possible to find a kidney poisoned by its own toxin; this has been described by French investigators. It is rather a violent type of nephritis, associated with severe pains in the back, with many casts and erythrocytes in the urinary sediment.

Uremic Fever.—Most senile diseases do not present fever, but occasionally we find a typical case of uremic fever. This condition is due to uremic poisoning and has every appearance of typhoid fever; it may also simulate malaria or pyelitis. It is characterized by a temperature course similar to that seen in typhoid, and may run its course for several weeks before abating. It is frequently diagnosed as typhoid fever, because physicians, as a rule, do not associate a condition of this

kind with nephritis. Typhoid fever and malaria are rare in the aged, while uremic fever is common and if we make the mistake of diagnosing the condition as malaria and administer quinine we may get disastrous results. Careful microscopic analysis is necessary to differentiate the conditions.

Pyelitis.—Pyelitis is occasionally secondary to nephritis but we must find out whether there is another cause in the background. I have said several times that, in the aged, cancer of the colon or liver may cause pyelitis, therefore one can never be too careful in establishing a diagnosis.

Uremic Coma.—I wish to mention one point in particular regarding comatose patients. No matter what the cause of coma may be, urinary examination usually reveals the presence of albumin, sugar and casts; this fact should be remembered when making a diagnosis.

CHAPTER XVII

SYPHILITIC NEPHRITIS

A few years ago a young man consulted me for a chancre, which went its usual course. About four months after the initial lesion he complained of several indefinite symptoms, such as cramps in the calves of the legs, numbness of the fingers, itching of the skin, and headache. One night I was summoned to his home in haste, and found him in coma. The attack occurred while he was talking with friends and apparently came out of a clear sky, as there was but little warning. He remained comatose for four days; urinalysis showed a slight trace of albumin and an occasional hyaline cast. A diagnosis of syphilitic nephritis was made.

It was impossible to give any medication by mouth, but with enemata and hot packs free elimination was established. On the fifth day he recovered from the coma, and arsenic trioxide, grain $\frac{1}{100}$, was administered every three hours. He was given an absolute milk diet and was kept in bed five weeks on this regimen, to which a few vegetables and cereals were finally added. After the third week albumin appeared in abundance, and many hyaline and granular casts were seen. Five months elapsed before he recovered sufficiently to resume work.

CASE II.—A man, aged 30, had a chancre, and during the secondary course of the disease developed cerebral symptoms, which were diagnosed as cerebral syphilis. However, urinalysis showed albumin, and the microscope a field literally loaded with blood and casts. A diagnosis was made of acute syphilitic nephritis with uremia, caus-

ing cerebral symptoms. He presented a very malignant form of the disease and died a few days afterward.

CASE III.—A Civil War veteran was infected during the War. He had a syphilitic lesion of a toe, which had undergone sarcomatous degeneration. At times he showed evidence of nephritis with accompanying prostatitis. This was always relieved by the use of sajodin, in doses of eight grains every three hours.

CASE IV.—A college professor had a chancre fifteen years ago. He complained of urinary symptoms which were due to prostatic hypertrophy and there was accompanying nephritis. Mercury in the form of the yellow iodide, gr. $\frac{1}{4}$, three times a day, would always relieve him.

In the first two cases I point out the toxi-infectious nephritis brought on by syphilis, following the primary lesion in the course of secondary symptoms. It is exactly the type of infectious nephritis seen as a complication of scarlet fever, smallpox, pneumonia, influenza or erysipelas. Like other infections, at times, syphilis assumes a very malignant form, and may cause great inflammation in kidneys which were previously healthy. *It is as important to watch the kidneys while treating syphilis as it is in a case of scarlet fever.* Sometimes the renal irritation may be slight and pass unnoticed, developing into a chronic form, as seen in Cases III and IV.

Nephritis due to syphilis may come early in the course of the disease or may appear late. Many cases of interstitial or parenchymatous nephritis in old people are due to syphilis, but are rarely diagnosed. Syphilitic nephritis may also be hereditary. It may appear during the course of the first year of life or fifteen or twenty years later. (Fournier.)

One might attribute nephritis to the use of mercury.

In the first case I described, mercury or potassium iodide had not been used. Moreover, mercury will have a curative effect upon the condition, while there will be relapse if the treatment is discontinued. A study of workers with mercury shows that they rarely have a kidney irritation, except in acute mercurial poisoning, in which death may come from anuria, the result of nephritis. Lead workers frequently have nephritis, but it is rarely seen with the former. It is safe to use mercury for the treatment of syphilitic nephritis.

Syphilitic nephritis comes with little warning. There may be a few symptoms, such as headaches, dizziness, dysuria, itching of the skin, puffiness of the lower lids, cramps in the calves of the legs and "dead fingers." In the case first mentioned there were few urinary findings at first, but at the end of the third week the microscope showed an abundance of casts. *Sometimes with hyperacute nephritis there will be few urinary findings the first few days of the disease, which might lead to an error in diagnosis.*

Syphilis may cause a great deal of trouble in the kidneys, more so than any other disease, including diphtheria and scarlet fever. When it does prognosis is always grave, and it must be considered a dangerous complication. It may cause but slight apparent damage to the kidneys, yet leave an organ so weakened that it will be easily influenced by another disease, like influenza.

The acute cases that recover suffer from a weakened condition of the kidneys. When I see men recovering from these attacks I wonder whether some one will recognize nephritis thirty years from now to be syphilitic and requiring a special treatment. The acute syphilitic nephritis today may be a chronic syphilitic nephritis in a man of sixty-five years. Do we often recognize syphilis as a cause of senile nephritis? I believe we do not, but

in cases which are recognized, results are usually rapid and satisfactory.

Few physicians take sufficient interest in old patients to analyze a case carefully enough to make an accurate diagnosis. The man described in Case III was quickly relieved from his symptoms. There are many old men suffering today who were infected with syphilis several years ago, but it has been forgotten and the doctor does not recognize it. To be sure, syphilis in the aged requires different treatment from that employed at maturity, but it must be discovered as a cause. An old man will seldom admit the disease, yet in history-taking we should think of this condition. Sometimes a scar on the leg or penis will tell the story. Only the routine examination in the aged, an inventory of the system, will elicit the cause of many diseases. The patient described in Case III was infected over fifty years ago. Parenthetically, I might say that his daughter died of what was thought to be pulmonary tuberculosis; his granddaughter of tuberculous meningitis; his son of a large syphilitic growth of the neck, which had undergone sarcomatous degeneration. The old man outlived his family. Had I known his history, I might have been able to save his daughter and granddaughter, as I am sure the conditions were due to hereditary syphilis. Occasionally, however, syphilis and tuberculosis will be combined, which makes treatment very difficult. I remember a young man who had a tertiary lesion of the leg which resisted all treatment. Several members of the family had died from tuberculosis. I prescribed guaiacol after stopping mercury and later returned to mercurial treatment, which then caused some improvement. The man described above with a syphilitic growth of the neck resisted all treatment because it had undergone sarcomatous degeneration. *We must not overlook the fact that sarcoma or cancer may be engrafted upon a syphilitic lesion.*

Sometime ago I attended a woman forty-six years of age, who was infected twenty years before with syphilis by a doctor who operated on a sebaceous cyst. A chancre developed at the point of incision on the back. She complained of the minor symptoms of Brightism, such as headaches, nervousness and dyspnea. The symptoms in no way differed from ordinary nephritis, but resisted treatment. I later prescribed daily inunctions of mercury, and, internally, ten grains of potassium iodide, taken three times a day. The improvement was soon evident, and now each time she complains of these symptoms a few days' treatment will clear up the condition. The physician who follows his patients for many years is capable of making such diagnosis, while it is often difficult to diagnose the condition by modern methods. I feel sure that the Wassermann test is not always a safe guide in old age. It is difficult to make a diagnosis in old age, but we must not overlook the fact that many old people, religious and of strict morals to-day, led, when young, a life that would make a venereal infection easy. Many of them are syphilitics, but show little evidence of it. Many cases of senile nephritis and heart disease are due to syphilis, and must be carefully diagnosed.

Treatment of the Acute Form

An absolute milk diet is indispensable, but in the mild cases cereals may be added. It is possible to continue a milk diet for several months without untoward results. Arsenic trioxide, grain $\frac{1}{100}$, every three hours, is employed; later, mercury, in the form of the protiodide, may be given in daily doses of $\frac{1}{2}$ to 1 grain. At present I am employing novarsenobillon, prepared by Poulenc Freres, in Paris, but often use arsenic trioxide or sajodin (monoiodobehenate of calcium) eight grains

given every three hours. Stokes¹ finds salvarsan or arsenobenzol to be the quickest method of treating syphilitic nephritis. It does not irritate the kidneys unless given in too large dosage. He gives salvarsan in doses of 0.15 to 0.2 gr., later cautiously increasing to 0.4 gram. However, he finds it advisable to follow with mercury to obtain lasting results.

Milk should be skimmed at first and a tumblerful of it given every two or three hours, and should be continued for a long time. As improvement comes we might wish to add more to the diet. It should be continued, however, a sufficient length of time to permit a full subsidence of the renal inflammation. Like diabetes, when it recurs it is more difficult to cure.

“Syphilo-Brightism”

After the acute stage has passed, the patient usually goes several years without definite symptoms. There may be an occasional malaise, cramps in the calves of the legs and blurred vision. Sometimes I have found that when mercurial treatment was discontinued the symptoms of renal disturbance would reappear. Recently, I had a man under treatment with novarsenobillon. He had a slight nephritis complicating syphilis. When the second course of treatment was finished and the Wassermann reaction negative, treatment was discontinued for a time. At the end of a month the symptoms of nephritis reappeared and the Wassermann was + + +.

However, as the disease passes into the chronic stage, there are few symptoms and it would require a very careful analysis to discover any evidence of nephritis. The patient will continue, perhaps, in this way for several years, and possibly an infectious condition like influenza will bring about an acute exacerbation. Then it is very

¹ Stokes, J. H., *Journal of the A. M. A.*, 1916, LXVI, 1191.

difficult to distinguish between ordinary Bright's disease and syphilitic nephritis. The latter condition will cause all the symptoms of the ordinary type of Bright's disease. In many untreated cases there will be a syphilitic hepatitis, which will cause jaundice and ascites, a condition similar to hepatic cirrhosis or cancer of the liver. Indeed, I remember a man, aged fifty-nine, who was ill in this condition; it had been diagnosed as cancer of the liver and as incurable. He had a general subcutaneous edema, jaundice, ascites and retinitis. As he had a history of syphilis fifteen years ago, I prescribed sajodin, eight grains every three hours and one-fourth gr. of mercury protoiodide three times a day. He began to improve in the course of two weeks, and has been in fair health since. It is surprising to see edema disappear when treatment is directed to the specific cause. Oftentimes nephritis will not be fatal and the patient has passed from the acute form to the apparent ordinary type of Bright's disease. As time goes on he has what may be termed senile syphilitic nephritis.

Senile Syphilitic Nephritis

The condition termed senile nephritis, which in many ways differs from that seen in maturity, can easily be caused by syphilis. The initial lesion may have occurred thirty or forty years ago. To diagnose the disease is difficult, since the Wassermann test is not so accurate in old age as in youth or maturity. As the disease does not differ from the ordinary Bright's disease of old age, the diagnosis is a matter of supposition (Dieulafoy). If there is a history of syphilis, it is safe to call the nephritis syphilitic. It is all-important to make a diagnosis. Oftentimes the old person will forget or will not tell about a chancre he had several years ago. Most physicians are content with a diagnosis of nephritis with-

out establishing a further cause for the condition.

It requires several years for the tertiary form to develop, and it is, in fact, a gummatous condition of the kidneys resembling amyloid degeneration.

Notwithstanding the importance of diagnosis, we must not overlook the fact that the treatment of syphilis in old age is different from that of this disease in maturity, and some of the best results in treatment will be obtained by means of remedies other than mercury or the iodides. Arsenic trioxide, gr. $\frac{1}{100}$, every three hours or sajodin works well in the aged, together with free elimination through the emunctories. Novarsenobillion or arsenobenzol may be used intravenously, as in the acute form. Obviously, it is well to watch the action of all remedies as the renal tissues are weakened. It is necessary, in order to effect a cure, to stop the treatment and resume it from time to time.

The milk diet is not important unless the patient has an acute exacerbation, attended with edema and the presence of blood and casts in the urine. The diet ordinarily prescribed for chronic nephritis should be used.

In the aged we must look out for the secondary effects of remedies. Elimination is poor, and we are apt to get a cumulative effect of the drug. Arsenobenzol is the safest remedy to use for senile syphilitic nephritis; I have never seen any evidence of a renal irritation due to its use, no matter how long continued. Vittel water may be prescribed, with or without lactose. When the patient recovers from the discomfort of the disease it is usually difficult to induce him to continue the treatment. A careful analysis of the cases will show that mercury is not the cause of nephritis which occurs in syphilitic patients. This has been proved by Mauriac and Dieulafoy.

CHAPTER XVIII

SENILE DIABETES

CASE I.—A man, aged seventy-six, had complained of general weakness and as glycosuria had been discovered he had taken the Allen treatment for diabetes. When I first saw him he was extremely weak and the matter that gave him the most concern was his loss of appetite. He said that his diet did not include anything that he cared to eat. The fact that he had diabetes caused him great anxiety. I advised him to resume his usual mode of living and eat anything he wished. He was given a teaspoonful of the elixir of iron, quinine and strychnine phosphates, before meals.

In the course of a few days, the results were very evident, the patient said that he felt as well as ever, and in a month's time the sugar had entirely disappeared from the urine. This case represented a transient glycosuria which very likely was only a symptom of a general degenerative change.

CASE II.—A man, aged sixty-five, consulted me for polyuria and lumbago. He had diagnosed his own disease because of a similar condition of his wife, which had made him familiar with diabetes. He told me that if I found sugar he would not alter his mode of living because he felt that he was too old to change his habits. I found 2 per cent of sugar, but did not advise treatment, and today, eight years after the first consultation, he is working as well as usual and lives in comfort. In all probability to change his diet, which consists of the

coarsest food, would produce bad results. In fact, treatment does not seem necessary because the rigid diet would be more distressing to him than the few symptoms of which he complains.

CASE III.—A man, aged sixty-three, complained of loss of flesh and inaptitude for work. He had not been feeling well for a long time, but the symptoms seemed to him indefinite. Occasionally he complained of backache; he also had gingivitis, blurred vision, loosening and loss of teeth and a persistent balanitis.

The urine contained albumin, 1 per cent sugar, many granular casts and some blood. It was apparent that nephritis complicated diabetes; in fact, the symptoms spoken of were due to diabetes and not to nephritis.

I gave him a mixture containing two grains of pancreatin and sixteen grains of potassium carbonate to the ounce, a teaspoonful of this four times a day, but did not change his diet. I allowed him anything he wished to eat, which was coarse food, for he had always been a hard laborer. For the past two years he has been in good condition and is able to work as usual.

It is interesting to note in this case that this patient's wife had been a diabetic for years. The man described in Case II also had a diabetic wife.

CASE IV.—A professor, aged fifty-five, consulted me for a "run-down condition." For some time he had felt disinclined to work, inability to concentrate his mind, loss of memory, a tendency to sleep, and occasionally sciatica. He had no polyuria, polydipsia, or loss of weight. The urine showed one-half per cent sugar. I prescribed the elixir of iron, quinine and strychnine phosphates, now unofficial, and treated him according to the method advised by Dr. E. P. Joslin, of Boston.

I started with a diet containing carbohydrates to the amount of 150 gm. From this amount he went to 125

gm.; then to 100 gm., and on 75 gm. he became sugar-free. I kept him on a strict diet with vegetables of the 5, 6 and 10 per cent groups, with four ounces of cream.

He has remained sugar-free and is a most conscientious patient; he weighs his food and now has increased his diet to 150 gm. of carbohydrates. It has been over two years since he has had glycosuria, but several times each year he undergoes a thorough examination.

CASE V.—A woman, aged sixty, consulted me two years ago for pruritus vulvæ. I found 2 per cent sugar and also every evidence of chronic interstitial nephritis. I excluded sugar from her desserts, but did not interfere in any other way with her usual mode of living. She had probably been in this condition for a long time, but as she had very few symptoms, and as her diseased organs functioned fairly well, I decided not to treat either the nephritis or glycosuria. To interfere with one would simply activate the other.

CASE VI.—A woman, aged sixty-seven, had been under my care for several years for chronic glomerulonephritis. Her urine was examined each week and always showed much albumin, no sugar, and many hyaline and granular casts. Two years ago her kidney condition abated, the casts disappeared and she felt fairly well although she had a troublesome parchiness of the mouth, and consequently, polydipsia. Repeated examinations of the urine showed no sugar or β -oxybutyric acid.

She went to a neighboring city, consulted a physician who immediately diagnosed diabetes and advised a strict diet. There is nothing that an aged person fears more than diabetes. The diet was continued for some time with the result that when she returned to me the degenerative kidney changes had recurred, but the urine still showed no sugar.

On questioning the patient I found that the physician had not taken a specimen of her urine, therefore, had not tested it; consequently, had made a "snap diagnosis." Moreover, the rigid diet broke up an excellent compensation and caused the old nephritis to light up again. To this day the thoughts of diabetes have produced in her a mental depression which will never be overcome. Nothing will convince her that she has not diabetes.

CASE VII.—An Indian woman, aged fifty-three, had gangrene of the left forearm. After examining the urine several days in succession and failing to find glycosuria, on the fifth day I found 3 per cent sugar. She would not change her diet and moreover left the gangrenous forearm to be amputated by Nature. She absolutely refused to consider any surgical intervention. The amputation by Nature is as perfect as if performed by surgical means. Her health is better today than it has been for many years.

However, at times she experiences pruritus with eczema, and a noncarbohydrate diet is the only thing that will relieve her. The glycosuria is not present at all times and it is undoubtedly due to some pancreatic disturbance. This is evidenced by the presence of fat in the stools. She has refused to change her mode of living because the forbidden list for diabetics is the only food that she cares for and she has always lived in this way. She declares that Indians who were always in the habit of eating coarse food cannot live on any other. She will diet for about a week when she has a pruritus sufficiently severe to cause discomfort, then she returns to her usual diet.

In some of these cases undoubtedly diabetes has not been of long standing. Diabetes of the aged is entirely different from that of young persons. What will cure a

young patient will have the opposite effect on the disease of an aged individual. The diseases of advanced age require as much special attention as the diseases of childhood and if this fact is not borne in mind, disastrous results will often follow.

Many cases of senile glycosuria are transient and merely a form of senile degeneration. In other instances we find confirmed diabetes evidenced by all of the minor symptoms of this affection.

In Cases II and III both husband and wife had diabetes, which has been termed conjugal diabetes. Some of the French physicians who had observed this fact, spoke of it as possibly a contagious disease, but it is very likely due to the same mode of living.

Symptomatology, Diagnosis and Prognosis

Many patients will pass an ounce of sugar daily for several years without knowing it or having any symptoms. In some cases the symptom that will attract attention will be loss of weight. In others there may be inaptitude to work, nervousness, neuritis, backache, sciatica, muscular pains, melancholia, polyuria, polydipsia, polyphagia, balanitis and phimosis. Sometimes there will be urethritis which looks like that produced by the gonococcus. There is usually a tendency to drowsiness, pruritus, with or without eczema, ocular troubles (amblyopia) gingivitis, loosening and loss of teeth. At times there will be a single symptom which will cause great discomfort. In one instance I saw a troublesome case of balanitis with resulting phimosis. The man had made up his mind to take ether and get rid of the phimosis. However, the discovery of the cause, which was diabetes, probably saved him a good deal of inconvenience, for a proper diet checked balanitis and in time the phimosis was cured.

Sometimes these old diabetics will not have polyuria or polydipsia. In Case IV practically the only symptoms were sciatica and inaptitude to work. It was only through the regular process of routine examination that the sugar was discovered. Occasionally, pruritis of the genitalia with or without eczema will be the only symptom.

The estimation of sugar in the blood has given us a valuable method of diagnosing diabetes, since it is common to find the percentage increased above 0.12%, while the urine may be sugar-free. This test, which is easily made by a Kuttner-Leitz Microcolorimeter, should not only be employed in diagnosis of diabetes but also to detect any improvement in the condition after treatment is instituted. Blood sugar determination is of great assistance in deciding if a surgical operation is advisable for the aged patient.

Diabetes of the aged is usually mild, but very difficult to overcome. Senile patients rarely develop acidosis or kidney complications. Diabetes does not usually cause any increase in blood pressure or affect the arteries. On the other hand, arteriosclerosis may bring on diabetes, especially by producing disturbance in the arteries of the pancreas. Cardiac incompetency is a rare complication in the aged.

The danger from infection, however, is great, because the glucose medium in the blood gives an excellent soil for the fixation and development of the staphylococci, streptococci and tubercle bacilli, but tuberculosis in the aged is a rare complication, and when it is present it is usually without symptoms, and is only discovered on postmortem examination. The infectious diseases are apt to develop, partly because glucose makes an excellent culture medium in the blood and partly because the resistance is lowered.

Treatment

It is advisable not to tell an aged patient that he has sugar in his urine unless one is obliged to. Nothing causes more anxiety in senile patients than diabetes. The thought of a strict diet, the recollection of friends who have suffered from the disease, worries them greatly, but when (as in Case IV) the coöperation of the patient is essential, it is better to inform him.

In the matter of diet much depends on the individual case. In many cases of senile diabetes the Allen treatment and Joslin's treatment will give excellent results and perhaps add much to the patients' comfort, in fact it may add a few years to their lives.

The discovery of Insulin for the treatment of diabetes may completely revolutionize the therapy for this disease.

In some cases, however, in advanced age, it is bad judgment to change the mode of living. Oftentimes a radical change in the diet of an aged patient has decidedly bad results. In senility it is not advisable to stop any confirmed habit no matter how bad it is, whether it be eating indiscriminately, smoking or drinking.

Food such as pork, baked beans, cabbage, pickles, corned beef, or any hearty food, may not be especially good even for younger people, yet to allow the senile patient to eat anything he wishes will be a great help in treating his condition. When an old man's appetite is failing it causes him great anxiety, and usually any strict diet in the aged will produce anorexia and constipation. The cases that I do not interfere with do not present any symptoms which are very troublesome. There are times when it is advisable to place patients on a diet and in these cases I use the reduction of carbohy-

drates according to the method of Dr. E. P. Joslin. I know of many instances where the Allen treatment has given excellent results in the aged. One case I have in mind was a man, aged seventy, who had diabetic gangrene of the leg and was given the Allen treatment prior to amputation. When he became sugar-free the leg was amputated, and he lived almost a year after this in comparative comfort.

The following diet list is very convenient to use in private practice where it is difficult to secure the coöperation of the patient in weighing food, etc. It is far from an ideal diet, but, I repeat, in private practice it is impossible to follow out hospital rules. Moreover, if the diet list is too complicated hardly any one will take enough interest in the aged person to prepare the food according to it.

Diet List

ALLOWED

Soups and broths made of meat of any kind without vegetables; ox-tail, turtle, gumbo, curry.

Eggs in any form.

Fish. Fresh fish of all kinds and fish roe, anchovies. Salt fish, cod, mackerel and herring may be taken unless they increase **thirst**.

Fats. Olive oil and all animal oils and fats, such as butter, cream, cod-liver oil, bone marrow.

Fresh meat, fowl and game of all kinds. Ham, bacon, smoked beef, tongue, sweetbreads, kidney.

Vegetables. Spinach, cress, chicory, pickles, dandelions, beet tops, celery, artichokes, lettuce, cucumbers, green part of asparagus, cauliflower, French beans, all in moderation. One potato, size of an egg, daily.

Cheese, cream cheese, milk curds.

Jellies made of gelatin, calf's foot, with wine, but sweetened with saccharin, coffee jelly, lemon jelly.

Fruits, if acid, not sweet. Sour oranges, lemons and grape-fruit. Olives, sour apples, peaches, raspberries, currants, in very small quantity and occasionally.

Nuts, all kinds except chestnuts.

Whipped cream, custards, koumiss, milk, usually not over one pint a day; tea, coffee, cocoa.

Whiskey, brandy, rum, gin, dry Rhine or Moselle wine, claret, Burgundy, Apollinaris, Contrexeville.

Strict Diet. Meat, poultry, game, fish, soups, gelatin, eggs, butter, olive oil, coffee, tea; and for variety, tongue, sweetbreads, tripe, kidneys, pigs' feet, anchovies, lobster, crabs, sardines, shrimp, bologna sausage, smoked and pickled meat. Oatmeal, cream, cheese.

Substitute for bread. Gluten flour may be used for thickening broths, egg puddings, etc. Receipt for Gluten Biscuits: Gluten flour, one cup; best bran, previously scalded, one cup; baking powder, one teaspoonful; salt to taste; two eggs; milk or water, one cup. Mix thoroughly.

Substitute for sugar: Saccharin tablets, $\frac{1}{2}$ grain, obtainable at druggists. Each tablet replaces one lump of sugar. Do not exceed 4 to 5 grains daily. Very acid fruits may be sweetened with saccharin or cooked with a little cooking soda to neutralize the acidity. In cooking foods avoid flour. Melted butter may be used as a substitute. Roast beef should not be basted with flour; meat soups must not be thickened.

FORBIDDEN

Sugar in any form—syrup, molasses, candy, jams, honey. Rice, bread, sago, tapioca, arrow-root, cornmeal, hominy, barley, macaroni, spaghetti. Pastry, cake puddings and everything made of flour. Peas, parsnips,

beets, carrots. Champagne, cider, ale, beer and port.

* * * *

The difference between transient glycosuria and diabetes is only one of degree. In transient cases the urine will sometimes become sugar-free without treatment. When nephritis is complicated by diabetes or vice versa, I usually do not treat it, except by elimination through the intestines. It has been my experience that to treat one disease causes the other to become active and may terminate in a serious condition.

The elixir of iron, quinine and strychnine phosphates, now unofficial, works well clinically. Sometimes, especially if the patient's skin is bronzed, the solution of two grains of pancreatin in an ounce of the mixture of rhubarb and soda, works well in drachm doses four times a day. Codeine has a good effect on many cases of diabetes in the aged. If there is any acidosis, a teaspoonful of sodium bicarbonate three or four times a day is indicated.

There are two complications of which I wish to speak. I have treated several large carbuncles on diabetics recently, without excision or incision. An antiseptic solution somewhat similar to the liquor antisepticus alkalinus, N. F., with the addition of phenolic ethers and other essential oils, was injected deep into the carbuncle, one cubic centimeter being injected several times through the mass. This is repeated each day until it discharges freely. The Indian woman who had the diabetic gangrene of the forearm left the amputation to Nature and it resulted in a perfect stump; in fact, it has the appearance of a flap operation.

These cases were not treated nonsurgically in an endeavor to deprecate surgery, but because patients absolutely refused intervention. Unquestionably surgery is the proper treatment for these complications, and modern anesthesia applied to diabetic cases has made

great advances so that it is not such a serious problem to administer anesthetics to aged diabetics as it was in years past. Blood sugar determination has given the surgeon a means of solving many problems in surgical procedures for diabetic patients.

In the chapter on opotherapy I have mentioned the use of hepatic extract and pancreatic extract in the treatment of diabetes. By opodiagnosis, we can determine which secretion is deficient; if the patient shows improvement after the use of hepatic extract, the disease is probably due to the liver; if the hepatic extract aggravates the condition, pancreatic extract should be used and I have seen many cases apparently cured by these treatments. The dose is twenty-five centigrams of either extract, given four to eight times a day.

The discovery of insulin by Drs. Banting and Best and the Toronto group is one of the greatest achievements we have had in medicine. The treatment itself is extraordinarily simple and it can be used in all kinds of cases, both mild and severe. It is necessary, however, to be particularly careful about the diagnosis, since in old age many cases of transient glycosuria are seen and in these instances insulin may do harm, in fact the indiscriminate use of insulin may give fatal results. The diagnosis should be made by blood sugar examination, the normal range being between 120 to 150 milligrams per 100 c. c. blood, while the range in diabetes as a rule is from 150 to 500 milligrams. Urinalysis should be made for sugar and acetone and diacetic acid.

In using insulin it is necessary to continue dietary measures; the treatment is combined with dietary experiments in order to ascertain the maintenance diet. The treatment should be given in an institution where careful laboratory tests can be made before and during the treatment. When a reaction is experienced, as evidenced by a tremor, acute hunger, chill or slight visual disturbance, the patient should be given orange juice, glucose or honey.

Insulin has reduced the mortality of gangrene following operation. More conservative surgery is possible and the prognosis is greatly improved. In coma it may be a life-saving measure, but a sufficient dose should be given. The diagnosis of coma due to diabetes must be certain before treatment is given.

CHAPTER XIX

SENILE RHEUMATISM

A man, aged fifty-six, consulted me for stiffness in the joints and lameness; during the past five years he had had several acute attacks of what his physician termed rheumatism and during these attacks suffered from a facial neuralgia and swelling of the larger joints, especially the knees and ankles. There was accompanying cutaneous erythema, and the joints were so painful that he could not bear the weight of bed-clothes on the affected parts. He had severe occipital headache, back-ache, and complained of blurred vision.

The acute attack in each instance ran a course of about two weeks, and, on an absolute milk diet, he was able to resume his work at the end of a month.

Between the attacks he complained of what he termed muscular rheumatism. In the morning he was hardly able to get out of bed, but after exercising a little became limber. Frequently, he complained of pains in the sciatic nerve. At night he had severe cramps in the calves of the legs, which forced him out of bed because of the severity of the pain. The muscles in the calves of the legs seemed to knot, he was lame, and walked rather slowly, as if measuring his steps. The knees were somewhat stiff, which made it difficult for him to rise quickly from a chair. He had numbness in the fingers, and the legs were cold below the knees, feeling at times as if they were paralyzed. He was always cold, requiring more blankets at night than any one else in the house, even in summer.

A blood examination was negative, blood pressure

registered 175 systolic and 130 diastolic. Urinary examination gave the following report: Specific gravity, 1018; albumin, present; sugar, negative; indoxyl, negative; uric acid, increased; chlorides, diminished; acetone and diacetic acid, negative. Microscopic examination showed erythrocytes, leucocytes and many small hyaline and fine granular casts.

It was evident that chronic nephritis was the disease causing the symptoms of so-called rheumatism, and treatment directed to it gave excellent results. He was made to take a saline laxative each morning, a cabinet bath twice a week, a diet consisting of milk, cereals, vegetables and fish was ordered and when he suffered from an acute exacerbation of the disease, he was given an absolute milk diet.

Under careful treatment he lived comfortably for several years. Finally, the time came when the kidneys would no longer yield to treatment; he became an invalid, several of his joints becoming ankylosed so that he was unable to get out of bed and died of uremia.

This case represents a very common condition, ordinarily termed rheumatism, but this so-called disease was merely a symptom of chronic uremia and when treatment was directed to the diseased kidneys the patient improved. In private practice we see many cases similar to this, but symptoms may vary from one muscle affected to several joints involved; in time the patient may have definite paralyses as a result of uremia.

Dr. Solomon Solis-Cohen was fond of asking his classes the conundrum, "When is rheumatism not rheumatism?" His answer was, "Nine times out of ten." He asked a similar question about sciatica, which he answered in the same manner. Senile rheumatism is usually a symptom of some other disease, very often nephritis. We should not confuse it, however, with senile arthrosclerosis,

which is due to hardening of the cartilages in the joints and which is a normal senile change. The differential diagnosis is made in the following manner: A patient with so-called rheumatism becomes more limber after exercising, while a man who has arthrosclerosis finds that exercise is harmful to his joint condition and makes it more painful. It is important to make a correct diagnosis of these two conditions, as misdirected treatment may cause harm.

Rheumatic fever is very rare in the aged, although chronic rheumatism due to nephritis may manifest itself by acute articular symptoms, and, when accompanied by slight fever, might be diagnosed rheumatic fever. Heart complications are common in these cases, and are not due to rheumatism, but to hypertrophy of the heart as a result of nephritis. The articular symptoms are in reality due to an acute exacerbation of chronic nephritis. Acute articular rheumatism, in its true form, is caused by bacteria, while in the aged it is usually due to toxemia from some underlying disease.

Nodular rheumatism, also called polyarthritides deformans, is chiefly seen in patients between forty and fifty years of age. It is a progressive condition, commencing usually in the small joints of the hands and feet, and proceeding toward the trunk, causing considerable deformity, which is most marked in the fingers and hand.

Partial chronic rheumatism is ordinarily called senile arthritis, and usually affects the large joints. When it affects the hip, it is called morbus coxae senilis. At first the joint affection is painless; even exercise does not produce pain; as the process advances the joint becomes deformed, deformity being due to hyarthrosis. Any movement of the joint becomes painful and is often attended by intra-articular creaking. The end result is

often ankylosis. Again, in old age we get a form which is described under the head of chronic rheumatism of the phalanges, or Heberden's nodes. It is usually found in old age and is hereditary, being associated with asthma, sciatica and migraine. In fibrous chronic rheumatism, which affects tendons, ligaments and aponeuroses, we find deformities in which the ends of bones are misplaced, and form prominences.

Abarticular rheumatism is a term applied to the manifestations in many organs while the joints are spared. In this category is found facial neuralgia, torticollis, pleurodynia, lumbago and sciatica. We may find these conditions in a patient who has so-called rheumatic diathesis, but it requires great care to differentiate them from symptoms of other diseases. For example, diabetes or nephritis may cause them.

Gonorrheal arthritis is rare in the aged, but arthritis due to tuberculosis is not uncommon. I had a patient, aged sixty-eight, who suffered from tuberculous arthritis of the ankles and elbow, she had a tuberculous ulcer on the ankle. There had been no other manifestations of tuberculosis, and the disease did not inconvenience her a great deal. In the aged, we do not find this condition secondary to any other tuberculous process. I recollect a patient, aged sixty, who had for ten years suffered from joint pains in the elbow. It was evident that it was a pseudorheumatic process, but the exact cause could not be detected. After three years of suffering a tuberculous sore came on the skin, clearing the diagnosis. In the aged, tuberculosis does not usually produce great deformity, pain or loss of motion; it is rare to see any improvement in the condition, and if it is not interfered with, it usually does not cause more discomfort. It is often difficult to diagnose primary pseudorheumatism, but when we are not able to find the cause of the infection, we should suspect tuberculosis. The diagnosis is not

so difficult if the patient has hydarthrosis, because the fluid can be withdrawn and test of the articular fluid (cytodiagnosis) made by animal inoculation, and Arloing and Courmont's sero-diagnosis will settle the question.

Nephritis and Rheumatism

In private practice, I have found that the most common cause of senile rheumatism or pseudorheumatism is nephritis. It is in reality chronic uremia, and the joint and muscle symptoms are due to renal intoxication; it is possible to have a localized condition due to general toxemia. For example, I have seen cases in which nephritis manifested itself only by torticollis; I recollect a woman who was suffering from torticollis, and this was the only symptom she complained of. I did not recognize the true cause of her affection until she suddenly had a convulsion, and developed coma, which proved to be due to uremia.

Again, I have had patients with neuritis in the arm, who suffered intense pain and it proved to be a local manifestation of chronic uremia. Many times the joint symptoms due to cerebral uremia are followed by uremic paralyses of various kinds, such as hemiplegia, monoplegia, with or without Jacksonian epilepsy, aphasia, and facial hemiplegia.

It is possible to have chronic uremia affecting one organ. For example, we may have cerebral uremia, gastrointestinal uremia, respiratory uremia (asthma), cardioaortic uremia, characterized by a tendency to collapse and by pain, as in angina pectoris. Then we may have uremia affecting the joints alone, as in the case mentioned at the beginning of this chapter; it may manifest itself by a painful and swollen joint or muscle, lumbago or sciatica. In time, coma or convulsions develop, but for a while the disease spends its force on one organ

only, although it is difficult to see why it affects one and not another. I remember a man, aged seventy-two, who was taken suddenly ill, he had a pain in the right arm, and in a few hours the part was helpless. The limb became swollen and very painful on motion. The next day he appeared somewhat dazed and developed coma which was diagnosed uremia. Treatment was quickly given and in a few days he regained consciousness. The arm gradually became smaller, but for seven months he could not use it. At the present time he uses his arm and is able to do some work with it.

A gouty kidney will also produce symptoms of rheumatism. In gout the process commences with gravel and ends with nephritis.

A woman, aged sixty-five, complained of symptoms of rheumatism in her left arm, which was swollen and painful upon motion. An underlying carcinoma of the uterus was the cause of it, and I have seen this condition accompany carcinoma in this region so often that I always suspect carcinoma of the uterus or stomach when I see a woman who has pseudorheumatism in either arm.

Diabetes is a very common cause of rheumatic symptoms, and one of the first manifestations of the disease is sciatica, lumbago or pain in the joints. Diabetes is often associated with a gouty diathesis, and Bazin has grouped them under the name of arthritism. In this group he placed, gout, asthma, rheumatism, gravel, gall stones, obesity and diabetes.

A man consulted me for symptoms of sciatica. There were no other symptoms, but a routine examination revealed the presence of diabetes mellitus.

Diabetes also may cause indefinite muscular pains. Plumbism may cause symptoms of rheumatism, as may iodism, biliary lithiasis and obesity. I have seen many

cases of pseudorheumatism which were caused by intestinal toxemia. The latter condition is liable to produce symptoms similar to those of nephritis and diabetes, and when proper treatment is instituted, improvement is usually seen.

In the aged, the question of infection causing pseudorheumatism is very important, and undoubtedly many of these diseases are produced by the toxins developed in some focus of infection. Staphylococcus, pneumococcus or streptococcus may be the underlying cause, and it is sometimes a very difficult matter to discover the focus of infection. I believe that the ruthless extraction of teeth should be condemned.

The pseudorheumatism of cancer is very important, and not infrequently we see pressure symptoms from a cancer of the colon producing a condition in the extremity similar to rheumatism. Again, the toxins developed in carcinoma may be the cause of neuritis in some distant part.

Treatment

Believing that nephritis plays the most important rôle in the production of senile rheumatism, I direct attention to the kidneys in this type of case. If urinalysis shows nephritis to be present, I give the treatment for senile nephritis, and if the patient is robust, Seidlitz mixture, magnesium sulphate and potassium bitartrate, magnesium citrate, Pluto, or the like, is prescribed each morning before breakfast. If the patient is of the physically frail type, I prescribe a compound cathartic pill at bedtime.

The following diet list may be used and although it may be lacking in details, it serves a useful purpose in private practice when hospital supervision is not possible:

ALLOWED

Wheaten bread, stale or toasted; dry, unsweetened rusk or zwieback; soda crackers. Macaroni, oatmeal without sugar.

Fats in moderation only; butter very thinly spread and well rubbed in. Sometimes a thin rasher of bacon.

Vegetables chiefly as purées, thoroughly cooked, made of tomatoes, asparagus, or occasionally potatoes or fresh peas. Lettuce, mealy, well-baked potatoes, not too young or new; spinach, very young, tender fresh peas, very young lima beans, asparagus, stewed celery.

Oysters, fresh boiled or broiled fish without rich sauces. May be eaten with a little fresh butter and salt.

Eggs in any form except boiled or fried.

Broiled steak or chops, or mutton, chicken roasted or boiled, boiled capon, roast partridge, squab. Meats should be tender.

Baked or stewed apples or prunes. Occasionally, a little fresh fruit in season, eaten between meals.

Milk, milk and vichy, cocoa, weak tea taken with hot water, malted milk, Koumiss, Apollinaris, Celestins Vichy, Vittel.

FORBIDDEN

Rich soups, gravies and sauces; condiments, pickles; fresh soft bread of any kind, hot breads, all kinds of pastry, cakes, griddle cakes, doughnuts, muffins.

Sweets, jams, confectionery and sugar in all forms, especially in coffee and tea with milk.

Raw vegetables such as celery, radishes; potatoes, sweet potatoes, corn, peas, beans, eggplant, cabbage, cauliflower, turnips, carrots, parsnips.

Lobsters, crabs, salmon, herring. Smoked or cured meats, and pork in every form; corned beef, game, veal

except as broth. Twice-cooked meats, stews; cheese. Very acid fruits and skins and seeds of same. Alcoholic beverages.

In the chronic form of the disease, if the patient is robust, cabinet baths once or twice a week are very beneficial. Occasionally, we find an old man who takes Turkish baths, but the electric cabinet bath is more beneficial, and it does not take so long to obtain the same results. A cabinet bath once or twice a week, with an electric light cabinet is very effective.

Salicylates are harmful and irritating to the kidneys; aspirin or acetylsalicylic acid is a depressant, causes perspiration and constipation, and, therefore, should not be used in many cases. Heroin will usually relieve the pain of the acute affection; morphine is rarely necessary.

Diathermy treatments given by means of the auto-condensation chair, and also locally, have yielded excellent results. If a general treatment is given, the patient is placed in the chair and about 750 milliamperes are applied for one-half hour. If a local treatment is desired, I use two electrodes, varying in size from one inch square to four inches wide by seven inches long, placed on the affected parts. The milliamperage required depends upon the amount of heat a patient can stand. The treatment is given for one-half hour and is repeated two or three times a week. This form of treatment is very beneficial in the tuberculous form of the disease.

Heat is applied to cases which have a tendency to deformity by the application of superheated air at 130 degrees, 180 degrees or 200 degrees C., and the results are sometimes remarkable.

Sodium succinate, ten grains given every three hours, is of value in some cases of senile rheumatism. Other forms of senile rheumatism should be treated by attention to the underlying condition.

In rheumatism caused by nephritis, the results of

eliminative treatment are often remarkable, and if treatment is instituted before the disease has too firm a hold, many old persons will be spared the long suffering which accompanies this condition.

CHAPTER XX

URINALYSIS IN THE AGED

CASE I.—A woman, aged sixty-three, consulted me for numbness in the right side of her body. She was nervous, melancholy, and complained of polyuria, polydipsia and polyphagia. Urinary examination showed one and one-half per cent sugar and β -oxybutyric acid. She was given Dr. Joslin's treatment and in the course of a few days the urine became sugar-free. However, as this was brought about it was also observed that the urinary sediment, which was normal before the sugar disappeared, became filled with small and large granular casts.

It was evident that we were dealing with a combined condition of nephritis and diabetes and a nephritic diet caused the sugar to return. On a non-restricted diet she improved although the sugar did not disappear.

CASE II.—A man, aged seventy-six, had glycosuria but failed to improve on a strict diet. He had no other symptoms of diabetes and on a non-restricted diet the sugar disappeared.

CASE III.—A man, aged seventy, had nephritis for several years. The urine recently showed the presence of sugar, but he does not present any other symptoms of diabetes.

These cases are very common and any one who is doing urinalysis for his aged patients knows the frequency of these findings.

Case I undoubtedly represents a case of glycosuria of renal origin. Nephritis is the underlying disease and glycosuria is merely one of the symptoms. Cases II and

III represent glycosuria which is transient and due to the general degenerative changes accompanying old age. They do not require treatment.

There is another type of urinary finding in which the symptoms of diabetes are the most evident, yet the presence of many casts at different times shows the condition to be complicated by nephritis. The urine of comatose patients usually contains albumin, sugar and casts, making it difficult to diagnose Bright's disease or diabetes.

Albuminuria in the Aged

In most instances I do not attach much importance to the discovery of albuminuria in the aged. Its presence in most cases indicates a senile degenerative change which is normal. However, the combination of albumin, sugar and casts in the urine, together with clinical symptoms which point to disease, make the presence of albuminuria important. Likewise, where there is much pus or blood in the urine the thick layer of albumin is of clinical importance and comparative quantitative tests show whether the condition is improving.

It is well to use two or three different tests to avoid mistakes: I use the nitric acid test and also the acetic acid, salt solution and heat test; in this way it is possible to prevent a confusion with nucleoalbumin.

Glycosuria

In many cases the urine will have to be examined several days in succession, in order to elicit the fact that the patient has diabetes. I had a woman, aged fifty-three, who had gangrene of the left forearm. After examining the urine several days in succession and failing

to find glycosuria, on the fifth day I discovered 3 per cent sugar.

In the routine examination of the urine of aged patients the number of cases of glycosuria found is surprising.

I have found sugar in many cases of Bright's disease, a careful study of minor symptoms of Brightism seems to indicate that the sugar is a symptom, and possibly of renal origin. It is a serious matter to find sugar, albumin, and casts in the same urine.

Although Fehling's solution is very safe, Benedict's solution is undoubtedly more apt to reveal smaller amounts of sugar. It is well to corroborate the diagnosis by using both tests when there is any doubt.

In the aged the tests for chlorides, sulphates and phosphates are usually not very important.

Acidosis rarely develops in cases of senile diabetes, therefore β -oxybutyric and diacetic acids are not often encountered.

The urea test often fails to enlighten us in aged patients. Senile patients who are uremic may have a normal urea test. Indican is often found and is of great importance in determining the presence of intestinal toxemia. I have seen, however, some senile cases of intestinal toxemia that did not have indicanuria.

Microscopic Examination

An occasional cast, like the presence of albumin, is a normal finding in some urines and is not important. However, the presence of many casts together with red blood corpuscles indicates nephritis. At times it is impossible to discover these abnormalities and several examinations may be necessary before the true condition is revealed. This applies to contracted kidney, which is a very difficult condition to diagnose. The hyaline casts

are often so small and transparent that they are only found after the most careful examination. In some cases of contracted kidney it is only by repeatedly centrifuging the specimen that the casts will be detected.

Erythrocytes may be due to nephritis, cystitis, or prostatitis. Many granular casts contain erythrocytes and this indicates a serious condition.

Pyuria may be due to pyelitis, cystitis or prostatic disease. In women the pus may be of vaginal origin, therefore it is well to use a vaginal douche before collecting the specimen. A large albumin ring is apt to be caused by pyelitis. Pyelitis in the aged may be due to cancer of the colon. It is well to add acetic acid to the slide in order not to confuse the leucocytes with other things.

To make a correct interpretation of the urinary abnormalities it is essential to follow the clinical symptoms. For example, if symptoms of Brightism are predominant and sugar is also present Bright's disease would be more important than glycosuria. On the contrary, if sugar is combined with albumin and casts, if the symptoms point to diabetes a diagnosis of this condition should be made.

The presence of many red blood corpuscles almost always points to nephritis. If there were no symptoms attending these conditions a diagnosis of senile degenerative change would be made.

A routine examination should be made in all senile cases and the practice of depending upon an albumin and sugar test should be discouraged. Most physicians do these two tests, which are of very little importance in the aged unless combined with a microscopic examination.

I have seen several instances where physicians have diagnosed without making any examination at all. In a case of nephritis a woman consulted a physician who made a diagnosis of diabetes because she had polyphagia and polydipsia. He gave her a diabetic diet which ir-

ritated her condition and brought on an acute exacerbation of chronic nephritis. The patient admitted to me that she did not give a specimen of urine for examination.

More attention to the urinalysis of a senile patient would give better results. Sometimes proper attention to it will be the means of prolonging life.

An old man had been a burden to his family. So-called "old age" had made him very disagreeable in the house and life with him was extremely difficult. Attention was given to the cause of his "senile mental state," which was due to uremia and careful treatment in this direction produced a new man mentally, in time he resumed his work and became self-supporting. Today, the disagreeable mental state has disappeared and undoubtedly the family would feel it if he should be taken away. After all, there is no better citizen today than an old soldier who is well preserved mentally and physically.

CHAPTER XXI

SENILE ASTHMA

The possible causes of asthma in old age are many; it may be idiopathic or secondary to some other disease. At the present time, I am treating a woman, aged fifty-nine, who is suffering from asthma. She has two children who have been asthmatic for several years and her son's child also has the disease. She has not had asthma before, but for several years has been suffering from myxedema, which is quickly checked by thyroid extract. At the same time she has glomerulo-nephritis, and, strange as it may seem, the kidney condition improves for a time on thyroid extract, then kidney extract is given, which causes further improvement in the renal condition.

The asthmatic attack of this patient lasted two weeks and I was unable to relieve her. Urinalysis showed no albumin, but several hyaline and granular casts; the blood pressure registered 160 systolic and 85 diastolic. I prescribed a diet of milk and cereals, large doses of bromides and she finally recovered. At times the symptoms of myxedema reappeared and seemed to be of more importance than the renal condition, which called for the use of thyroid extract. It is difficult to differentiate the symptoms of myxedema and those of nephritis as the anasarca of Bright's disease resembles myxedema.

I have seen several cases in which there seemed to be an association between thyroid insufficiency and kidney disease and it is not uncommon to find that thyroid extract will check the renal symptoms.

The asthmatic symptoms in the case last mentioned were undoubtedly due to the kidney disturbance and if

such symptoms are carefully analyzed, many will show that asthma depends upon cardiorenal disease.

Senile asthma is usually a symptom of another disease, although it may be a disease per se. It may be emphysema, fibrous phthisis, valvular heart disease, or disease of the great vessels, a neurosis which is the manifestation of gout, rheumatism, or possibly due to a latent or confirmed uremic condition. It is usually associated with high blood pressure, but I have seen cases in which the pressure was low. The cause I have most often met with is kidney disease, but we must differentiate between dyspnea and true asthma. The latter is characterized by paroxysmal attacks of dyspnea and oppression, which come more or less regularly and are usually worse at night, and between the attacks the patients generally seem to recover completely. The attacks may come with marked regularity; Trousseau had one at about three o'clock each morning, when he was awakened by a sense of oppression he invariably noticed that the clock was going to strike three. His mother, from whom he believed he inherited his asthma, was seized between six and eight o'clock in the morning, but during the rest of the day was very active.

Professor Rostau, while physician to the Salpêtrière, Paris, made investigations on asthma in the aged and then made no difference between asthma and dyspnea. There was a time when he did not believe in idiopathic or nervous asthma and regarded asthma as always a symptom of some disease of the heart or great vessels. The following quotation from Trousseau, the famous French clinician, is very instructive: "Asthma is, in my opinion, a special and complete disorder, a manifestation, a peculiar form of a general complaint, having very variable local expressions, sometimes giving rise to paroxysms of dyspnea, of oppression of the chest, to a curious kind of coryza, and to peculiar catarrhal

attacks, which, as I took care to tell you, may constitute the whole paroxysm; but at times, also, manifesting itself by attacks of articular or wandering gout, by fits of gravel, by rheumatism or by hemorrhoidal affections."

Asthma is dyspnea of a special form and nature, but every paroxysm of dyspnea is not asthma. This neurosis may come on top of an organic disease of the central organ of circulation, since many grave heart conditions will cause little oppression in the chest, while others much less severe will cause great suffering. Asthma may accompany any organic affection, even cancer of the uterus, and, as in all other diseases, each patient has his own way of carrying his complaint.

It is necessary to differentiate senile asthma from senile emphysema, which may produce symptoms similar to those of asthma. There are many cases of emphysema in old age which are associated with asthma.

Senile asthma is not usually a fatal disease, although many deaths are caused by it. Day notes that out of 51,048 deaths at or about the age of sixty in London, between the years of 1843 and 1848, 3,312 were ascribed to asthma. He noted that the number of deaths at or about the age of 60 is nearly double that of the whole of the earlier period of life. As asthma in the aged is so often caused by cardiorenal diseases, it is difficult to state what part genuine asthma plays in the condition. Moreover, as it is usually a symptom of some other disease, it is safe to say that the primary affection is the cause of death in most cases.

Asthma may cause such suffering that the old patient may attempt to end his misery by suicide. Indeed, I remember a man of seventy who had repeated attacks of asthma; he finally killed himself.

There is an intimate association between asthma and skin diseases in old age as I observed in a woman who

had psoriasis, which affected the legs and arms. I gave her an ointment of ichthyol and calomel and suddenly the skin eruption disappeared, which was immediately followed by a severe attack of asthma that lasted several days and ended completely only when the eruption reappeared. I once saw a woman who had a tuberculous sore of the leg which was cured of its discharge, but it was followed by an attack of asthma. In old age it is possible to attribute many attacks of asthma to the sudden checking of an excretion or secretion like diarrhea, discharge from ulcers or skin eruptions or excessive perspiration which is localized. Such attacks are evidently due to an effort of Nature to rid the system of poisonous matter through expectoration.

In old age the most common cause of asthma that has come to my attention is Bright's disease. Patients usually have scanty urination, constipation and a dry condition of the skin. There may or may not be edema of the limbs, more often there is no albuminuria, but upon microscopical examination of the urinary sediment, many hyaline and granular casts are discovered. There may be no other symptoms of kidney disease and we may see uremia affecting one organ only. The attacks usually come at night, expectoration is at first scanty, later profuse often having a slight urinous odor.

It may be so clear a picture of nervous asthma, as observed in adults, that one would not suspect the kidneys. However, real asthma in the aged is very rare and a careful examination will most often show an organic disease in the background actually causing the trouble.

Climatic conditions, sudden changes of temperature, usually affect asthma even if it is due to kidney or heart disease. Almost invariably asthmatic patients have dyspeptic troubles and indiscretions in diet may bring on or prolong an attack.

Senile asthma is more serious than the adults' and cases of death have been reported during its paroxysms. I do not believe true asthma in old age to be more serious than in younger individuals, but as the disease is usually symptomatic of some other condition we must give a prognosis in accordance with the gravity of the primary disease. The attacks may last a few hours, several weeks, or months. I recently saw a case of symptomatic asthma in a man of 50 who had cardiorenal disease. For five months he suffered from pseudoasthma which was so severe that he could not lie down, but was forced to sit in a chair, head forward, resting on a pillow placed on a table in front of him. In this way he could sleep at night, but during the day he could not sit straight in a chair without having a paroxysm. Although there was no extensive involvement of the prostate gland, urination at times was somewhat difficult and the act of voiding would bring on a paroxysm of asthma so severe that death seemed impending. All remedies failed, except diuretin, which relieved him temporarily. He finally died after five months of intense suffering.

The skin test for the detection of hypersensitiveness toward the proteins of the common dietary and for the mechanical irritants which cause asthma, is a great step forward in the diagnosis and treatment not only of this latter affection, but hay fever, angioneurotic edema, skin diseases and many gastro-enteric disturbances. Dr. Robert A. Cooke (*Journal Immunology*, March, 1922), gives numerous original and quoted data which show that substances absorbed by inhalation play a much more important part as the specific cause of asthma than is generally supposed. Even house dust and hay dust may act as specific allergens and are not to be considered as merely mechanical irritants. Dr.

Cooke states: "the cutaneous test is accepted today as a diagnostic procedure in the study of human hypersensitiveness. It is indicative of clinical hypersensitiveness in at least 95 per cent of the cases reacting to extracts of such airborne substances as pollens, powdered root of orris, and animal danders." He reports that of 327 bronchial asthma cases which he studied in 1920, 26 per cent were diagnosed by the cutaneous test as due to absorption by inhalation of pollens, 42 per cent by inhalation of animal danders, 16 per cent by inhalation of vegetable powders, 3.6 per cent by ingestion of foods, and the remainder as bacterial or undiagnosed cases.

Some cases are quickly relieved in a paroxysm while others seem to resist all treatment. The renal form of asthma is very difficult to treat and when we find a remedy which checks one attack it may not have any effect on the next. First of all, it is necessary to discover the organic cause, if any exists, and treatment must be directed to it. Asthma attributable to Bright's disease demands a rigid nephritic diet and during the attack it is well to use a milk and cereal diet. Following the attack, a fairly liberal diet may be given, but great care should be taken that the patient does not overeat. Many times I have seen a patient relapse after a hearty meal.

Attention should be given to the bowels in every case; blue mass, 5 grains, followed in six hours with Pluto, Seidlitz mixture or epsom salts, or mercury and chalk, one grain every half hour for 5 doses, followed by a saline laxative, may be used. If the patient is too weak to take a saline laxative, I prescribe five grains of blue mass with two compound rhubarb pills.

If the patient is suffering from a kidney disturbance, evidenced by microscopic examination, and scanty urina-

tion, headache, dizziness, swelling of the limbs, I prescribe the following:

℞	
Diuretin	3 ij
Aquae Cinnamomi	3 ij
Misce:	
Sig:	
Teaspoon in $\frac{1}{2}$ winglass of water	
every three hours.	

When suffering is intense I repeat this dose in one hour, then give it every three hours. It is advisable not to continue diuretin over forty-eight hours, although recent investigations have shown that it can be continued over a long period of time if necessary. Although theobromine sodium-salicylate is said to have the same formula, and is less expensive, I prefer diuretin as it seems to give me better clinical results.

Hypodermic injections of 10 minims of adrenalin solution, 1-1000, will work well in many cases, relaxing the bronchial tubes. It works quickly and often it is not necessary to repeat the injection.

I do not like the idea of giving morphine hypodermically, alone or in combinations, in old age, since it may cause sudden death by paralysis of the respiratory center. If morphine is combined with atropine, the danger is lessened; in some cases where the suffering was intense and demanded quick relief I have given a hypodermic injection of the following combination:

℞	
Morphinae Nitratis	gr. $\frac{1}{20}$
Nitroglycerini	gr. $\frac{1}{100}$
Strychninae Nitratis	gr. $\frac{1}{50}$

If the blood pressure is high, a hypodermic injection of $\frac{1}{100}$ grain of nitroglycerin will often give almost immediate relief and may be repeated in twenty minutes if necessary. Occasionally, nitroglycerin will cause an

intense headache which will last for several hours. It is, however, usually a safe remedy in old age.

In some cases the following prescription will give good results, especially in those where the patient is able to walk about:

℞		
Potassii Iodidi		3 j
Potassii Bromidi		3 ij
F. E. Ipecacuanhae		3 ij
F. E. Lobeliae Inflatae		3 j
Elixir Gaultheriae q. s. ad.		3 iv
℥. ft. sol.		
Sig: Teaspoonful in one-half wineglass of water every half hour until relieved, then every three hours.		

At other times *grindelia robusta* will be beneficial and may be prescribed as follows:

℞		
F. E. Grindeliae Robustae		3 j
Elixir Sodii Bromidi (gr. X—3 j)		3 j
Glycerolis	"	3 ij
Elixir Aromatici—q. s. ad.		3 ii
Sig: Teaspoonful in one-half wineglass of water every three hours.		

Digitalis is an uncertain remedy in old age, but in many cases of cardiac asthma it will yield satisfactory results. I usually use small doses of fat-free tincture or sometimes use an infusion. The following formula containing *digitalis* is useful in many cases:

℞		
Tincturae Digitalis		3 ij
Glycerolis		3 ij
Elixir Aromatici q. s. ad.		3 iv
Sig: Teaspoonful in one-half wineglass of water every three hours.		

To this we may add sodium bromide or the fluid extract of *grindelia robusta*. When an attack is felt to be coming on, an emetic may relieve the paroxysm and

Kermes mineral often works well with the aged. A tablet containing Kermes mineral gr. $\frac{1}{6}$ combined with $\frac{1}{12}$ grain of powdered ipecac, can be given every five minutes until the patient is relieved. It may require fifteen or twenty tablets to cause nausea, but when it comes relief usually follows.

Asthma powders containing stramonium and belladonna will sometimes relieve an asthmatic patient. When everything fails to check a paroxysm, alcohol in its full physiologic action will often relieve the patient. A tablespoonful of whiskey or brandy should be given every half hour; after several doses a red spot appears on each cheek, then alcohol should be taken every two or three hours in order to prolong the full physiologic effect.

When the attack is over the patient should be kept on a light diet for three or four days and remain quiet during this time. If the kidneys are the cause of the affection, dietary treatment must be prescribed and the bowels should be opened by a laxative each day. If the patient is robust, electric cabinet baths may work well, ridding the system of toxins through the skin.

Treatment must be carefully given, so as not to affect any ulcers or discharges from the skin diseases, or suddenly check any excretion or secretion, which would be detrimental to aged patients.

There are cases of senile asthma that will be relieved by the use of thyroid extract. It should be given at first in small doses, later increased to its full action. There are other cases which are due to renal disease and seem to do well on the extract of kidney substance. Recently, I treated a case of asthma due to cardiovascular disease by the extract of myocardium, each pill containing 25 centigrams of the substance, six being given each day. This extract is said to contain adrenalin.

There are other cases in which strychnine seems to be

of benefit, perhaps on account of its stimulating effect.

In some instances, when asthma is associated with edema of the lower extremities, a salt-free diet will bring about an improvement in a few days. Sometimes, in chronic cases, arsenic trioxide, gr. $\frac{1}{100}$, three times a day will help, especially if the disease is accompanied by coryza.

One of the newer and most effective remedies for most every form of asthma is benzyl benzoate, which is an ester of benzyl alcohol and benzoic acid. Undoubtedly the effects of the aromatic balsamic resins in chest conditions are due to this ester, which is present not only in the balsams, but in several of the flower oils. In order to be of use in therapeutics, benzyl benzoate must be free from chlorine and phosphorus, with an ester content of 97 per cent.

The dose ranges from 5 to 25 minims dissolved in alcohol and diluted with milk, chocolate or water. It has a disagreeable taste and it is difficult to find a vehicle which will cover it. Some manufacturers make 20 per cent aromatic solution; others dispense it in capsules. One of the best vehicles which assists in making it more palatable, is the syrup of yerba santa. Benzyl benzoate must first be dissolved in alcohol and then the syrup is added. The following prescription is satisfactory:

℞	Benzyl Benzoatis (100%) purae Alcoholis Syrupi Yerbae Santae	$\frac{3}{4}$ j $\frac{3}{4}$ ij $\frac{3}{4}$ j
℥	Sig: One-half to two teaspoonfuls every three or four hours, diluted in one-half glass of water, cocoa or milk.	

Benzyl benzoate is slightly irritating to a weak stomach and it seems to me that it also irritates the kidneys in cases of Bright's disease. It does not benefit every case of asthma; I recently gave it to a patient suffering

from bronchial asthma with excellent results while a patient suffering from uremic asthma was not relieved by it.

Dr. Macht in his investigations at Johns Hopkins University (*Southern Medical Journal*, 1919, No. 7) makes the following deductions:

1. That benzyl benzoate treatment of asthma was beneficial in 75 per cent of the cases.

2. In some cases the results were striking and equalled only by the injections of epinephrine.

3. A few cases, in which epinephrine failed, were relieved by benzyl benzoate, administered by mouth.

4. Curiously, a number of cases failed entirely to react to benzyl benzoate treatment.

5. The above fact was not surprising, as asthmatic cases include really a variety of different conditions and dyspnea, when due to other causes than bronchial spasm, will not be checked by the benzyl treatment.

Dr. Macht found that in some cases benzyl benzoate administered by mouth markedly lowered blood pressure, both systolic and diastolic, the effect in practically all such cases being more lasting than that produced by the nitrites.

Almost all asthmatic patients suffer from indigestion and paroxysms may be brought on by overeating. It is well to keep the bowels freely open each day and the diet should be restricted. Recently, I had a patient who was relieved by chloral hydrate combined in the following mixture:

R

Potassii Bromidi	3 v
Chloralis Hydratis	3 ijss
Fluidextracti Hyoscyami	3 ss
Fluidextracti Cannabis Indicae	3 j
Elixir Simplicis q. s. ad.	3 iv

M

Sig: Teaspoonful in one-half wineglass of water every three hours.

It gave quick relief and was continued several days with good results.

High frequency current may be beneficial in cases where blood pressure is high, it should be given in the form of autocondensation, about 1000-1500 milliamperes for thirty minutes, three times a week. It induces free perspiration, lowers blood pressure and improves general health.

Inhalations of steam which contain a few drops of guaiacol may check the spasm. Calcium creosote, in tablets or solution, given internally will sometimes act as a good tonic after the attack.

Attention should be given to hygienic conditions, exposures to sudden changes in temperature avoided and warm clothing worn the year round. Theaters and overcrowded places should be avoided and baths should be taken frequently.

CHAPTER XXII

SENILE EMPHYSEMA

Emphysema is present in most cases of senile asthma, but the association between the two is so intimate that it is sometimes difficult to diagnose it. Emphysema often being of mechanical origin, it is well to remember what takes place when a person coughs; first, the glottis closes, after a deep inspiration, and the muscles of expiration contract in order to expel from the bronchial tubes the air, mucus or blood, which they may contain, and sometimes it requires considerable force to overcome the resistance of the bronchial tubes; the pressure is exercised from within outwards in the tubes and pulmonary vesicles. The air which is inside the bronchi greatly tries the elasticity of the walls of the air cells and when powerful pressure is repeatedly sustained, the chest expands, the lungs dilate and emphysema follows. In some instances the air cells burst, and we have interlobular emphysema.

Whooping-cough, chronic bronchitis or asthma, which cause coughing, are equally apt to produce emphysema. In old age, although we may find emphysema as a cause of asthma, it is usually an effect of it.

An asthmatic person inspires more slowly and deeply than a normal one, and expires in a more violent manner; besides this abnormal expiration, the violent cough of asthmatics tends to produce greater respiratory efforts.

In old age, there are certain anatomical conditions which are liable to cause emphysema; senile degeneration of the lung, atrophy and perforation of the alveoli, and inadequate nutrition of the lobules (due to a lessened

blood-supply from arteriosclerotic pulmonary vessels), diminished aeration of the blood in the lungs, tend to bring about this condition, trophic changes as well as mechanical action will produce it. The rigidity of the chest walls has some effect on the compression of the lungs.

Sometimes the emphysematous vesicles rupture and if it involves the pleural cavity, pneumothorax develops.

The characteristic shape of the chest seen in emphysematous persons at maturity is not noticeable in old age unless the condition happens to have existed for several years. In senile cases, the chest walls are rigid and the diaphragm carries on most of the work of respiration. The most distressing symptom is dyspnea and in addition to this we may get violent attacks of suffocation. Emphysema combined with asthma, fibroid phthisis or heart disease is a very serious condition and liable to cause intense suffering.

Actual measurements of the chest show that the respiratory capacity is reduced about 50 per cent. The affected areas give forth harsh sounds upon auscultation, inspiration is shortened and expiration lengthened. Dyspnea accompanies the least exertion.

In physical examination it is often difficult to hear the heart sounds, but if heard clearly they will usually reveal an accentuation of the pulmonic second sound, which results from pulmonary congestion. In time the heart undergoes changes, due to increased work, the right ventricle not being able to overcome the resistance in the circulation of the lungs; this heart condition, in turn, makes the dyspnea worse and broken harmony with its train of symptoms results. The liver becomes congested, as well as the kidneys, and the urine shows marked changes. Microscopic examination reveals many hyaline and granular casts and uremia may develop.

Symptoms may appear in other organs as a result of

the circulatory disturbance and the patient becomes cachectic through loss of appetite. Senile emphysema often accompanies diabetes and may be combined with other senile diseases, general arteriosclerosis, nephritis and influenza are apt to cause serious pulmonary affections which are almost invariably fatal.

As in old age there is atrophy of the lungs, inspiration is lessened, expiration is delayed and difficult, these are the main diagnostic symptoms of senile emphysema. An x-ray examination is very important as it not only facilitates the diagnosis, but will reveal the presence of aneurysm of the aorta which might be a cause of the condition. It is in cases of Bright's disease or chronic heart disease that difficulty is met in making a diagnosis.

A patient suffering from senile emphysema may live for several years under proper climatic and hygienic care, but the chances of complete recovery are small.

The treatment of emphysema is somewhat similar to that of senile asthma, the same remedies being employed to check the distressing symptoms,—dyspnea. Attention should be directed to proper hygiene; the patient should avoid theaters and other crowded places and not be exposed to sudden changes in temperature, which in some cases involve a change of climate.

Expectorants should be given to relieve the accompanying bronchitis, and Kermes mineral with powdered ipecac, will often suppress the dry, hard cough. Benzyl benzoate will sometimes check in a measure the attacks of dyspnea and occasionally iodide of potassium will have a favorable action.

When the heart shows signs of weakness, digitalis may be of benefit, it can be given in the form of the fat-free tincture or combined as in Trousseau's diuretic wine. Diuretin will be useful when there is edema of the lower limbs as a result of broken compensation. Digitan may help in some cases.

An interesting case of senile emphysema in a man of sixty-one, came to my attention recently. The patient had been under treatment for two years without relief, and complained of dyspnea, wheezy respiration and cough, which were so distressing at night that he could not sleep. He finally confessed that forty years ago he was infected with syphilis, had taken three years' treatment of mercury and potassium iodide and had considered himself cured. He later believed that the emphysematous condition depended upon the old syphilitic infection and I prescribed eight grains of sajodin four times a day. In twenty-four hours he was relieved and at the end of three days there was no wheezing, he could sleep all night without being disturbed by the cough. Undoubtedly, this was a case where syphilis played a part in the production of emphysema and it seems incredible that the ailments from which this man had been suffering for two years should have disappeared in such a short time. We must not overlook syphilis in old age, as a cause of diseases of the lungs, heart or kidneys.

There have been several devices made for the pneumatic treatment, among which is Waldenburg's portable apparatus. Gerhardt recommended a mechanical assistance which compressed the thorax and Rossbach made a "breathing chair." Strumpell in his clinic at Leipsic built a simple apparatus by means of which the patient could press two boards together, exerting considerable pressure on the thorax during each expiration.

Emphysematous patients should rest in an arm-chair which will permit them to sit forward, allowing the arms to rest easily. In this way, expiration is made easier and the pain somewhat alleviated.

In some cases where suffering is very intense, it will be necessary to administer oxygen for temporary relief of the condition.

CHAPTER XXIII

SENILE BRONCHITIS

CASE I.—An old man was taken ill with a chill and severe pain in the sternum; a deep breath and cough were painful; he had a fever of 101° F., pulse was rapid and weak. As the condition progressed, expectoration became more difficult as he raised a small amount of tough, viscid, semi-opaque, grayish mucus.

His shortness of breath became more pronounced and he was obliged to sit upright in bed in order to obtain relief. The lips and tongue were livid and he failed rapidly. Breathing became more laborious, the pulse more rapid and irregular, and the old man died on the second day of his illness.

CASE II.—A woman, aged sixty-seven, had a pain in the chest, and a cough. Her temperature was subnormal and the pulse rate very rapid. The expectoration was painful, the sputum thick and rusty. Toward evening she had a slight elevation of temperature. She gradually improved and on the tenth day was much better.

These cases represent the acute form of senile bronchitis, which is very common and it is most difficult at times to differentiate between severe bronchitis and pneumonia, especially in the fulminant type in which the patient dies a short time after the onset of the attack.

The type ordinarily seen is similar to Case II where the process is not so violent as in Case I, and where the patient is not sick enough to make one think of pneumonia. It is difficult to diagnose senile congestion of the lungs as there is but little difference in the symptoms of

the two conditions. Congestion of the lungs may accompany acute bronchitis, but we often see congestion due to nephritis or heart disease. As a result of nephritis, we may find a secondary congestion of the lungs due to the fact that the heart is not able to send the blood through the vessels of the lungs and kidneys.

Bronchitis due to influenza is often fatal in the aged and rapidly develops into bronchopneumonia. It may develop from rhinitis, it usually begins as a distinct disease.

In treating acute senile bronchitis the first thing to do is to give a saline laxative to deplete the system, to combat pulmonary congestion and free the bronchial tubes of mucus. I usually prescribe small doses of ipecac and Kermes' mineral to loosen the cough. Ammonium chloride or ammonium carbonate work well clinically and medicated vapors, for instance, boiling water to which guaiacol has been added, may be of benefit for inhalation. If there is prostration it may be advisable to give one grain of quinine sulphate and $\frac{1}{60}$ grain of strychnine sulphate every three hours. It is essential to keep the bowels open.

When there is extreme shortness of breath (perhaps it may be called suffocative catarrh of Laennec), alcohol in its full physiologic effect is indicated. Brandy is given in one-half ounce doses every half hour until the cheeks are red, and in those cases of extreme prostration where death is imminent, alcohol in its full effect may be the means of saving the patient, but unless given in large doses it is of little benefit.

Chronic bronchitis may develop from the acute form or may be a distinct affection due to some secondary cause, as nephritis or heart disease. A moderate amount of bronchial secretion is normal in the aged, especially in the morning when they clear the bronchi of the mucus which accumulated during the night. However, a great

amount is abnormal and may be the only symptom of chronic bronchitis. Again, an old man may suffer from this condition and a sudden change in the atmosphere aggravate the disease, his breath becomes short and he has a sensation of pressure in the chest.

Constipation, causing congestion of the portal circulation, or nephritis causing congestion of the kidneys, a secondary congestion of the bronchi results. Sudden checking of a skin eruption, or of leucorrhea may cause it. Chronic bronchitis may be due to tuberculosis but this is rare in old age. There is supposed to be an intimate association between bronchitis and piles, gout, rheumatism, checking of perspiration, suppression of urine, too rapid healing of ulcers, etc.

Auscultation may show a few scattered rales, but no definite changes. Percussion does not reveal any abnormality and x-ray examination does not give much evidence in these cases.

The disease is slow yet progressive, but in many cases I fail to see that these patients develop pneumonia more often than other old persons. It seems, in most instances, to be a harmless affection unless the bronchial secretions are suddenly checked.

In treating senile bronchitis the general condition of the patient should be given consideration and warm clothing worn. Woolen underclothing is advisable and if the patient is able to spend a part of the year in a warmer climate, it will be of great benefit.

The expectoration, no matter how profuse or fetid, should not be checked as it may cause paralysis and suffocation. Ammonium chloride combined with elixir calisaya is advisable, or the elixir of iron, quinine and strychnine phosphates may be given. A mixture of calcium and cresote may help and arsenic trioxide, $\frac{1}{100}$ grain every four hours may be of benefit. Cod liver oil works well with the aged and should be prescribed.

Too much cannot be said of the care of the bowels in these cases. If we relieve the portal congestion with a mercurial and a saline the next morning, the patient's breathing will be greatly improved. Keeping the emunctories working and preventing any further congestion of the internal organs relieves the heart of this extra load so that it does not have to work as hard to force the blood through the lungs.

A restricted diet should be ordered and overeating prohibited. A diet for nephritis will be satisfactory even though the patient may not have nephritis. A microscopic examination of the urine should be made to discover whether the kidneys are diseased, since the latter is a common cause of senile bronchitis.

CHAPTER XXIV

SENILE PNEUMONIA

CASE I.—A man, aged seventy-five, had coryza which rapidly developed into bronchitis. The next day he had a severe pain in the right side. His temperature and pulse rate were normal; but the respiration was thirty a minute. Although no local signs of consolidation could be detected, the fact that he was rapidly failing, together with the increased, shallow respiration, gave clinical evidence that he had senile pneumonia.

He continued in this condition for several days, and although the temperature and pulse-rate were normal, the respiration continued about thirty-five a minute. On the seventh day there was no apparent improvement, and it was decided to try the last resort for the aged, namely: to force him out of bed and get him into a chair.

His breathing became easier, and in a few days it was evident that he was gaining. In the course of a few weeks the old man was able to resume his work.

CASE II.—A woman, aged seventy, had a fall which resulted in a fracture of the right hip. The family was warned that the greatest danger was the development of senile pneumonia.

On the fourteenth day after the accident it was noted that she was rapidly declining. The pulse and temperature were normal, but the respiration was thirty-six. She died two days after from senile pneumonia. It is interesting to note in this case that there was no cough.

CASE III.—A woman, aged sixty-eight, had headache, cough and shortness of breath. Temperature was 100°

F., pulse rate eighty-five and respiration thirty-eight. It was a typical case of what is ordinarily called pneumonia. The cough, rusty sputum, shallow breathing, pain in the side, low muttering delirium, restlessness, and picking at the bedclothes were symptomatic. In a younger person this might make one think of typhoid fever.

The urinary picture, however, disclosed another condition. The sediment showed an abundance of red blood corpuscles, and many granular casts were filled with blood.

This case was not pneumonia, but an acute exacerbation of chronic nephritis. It is ordinarily called pneumonia, and if it was more generally observed there would be fewer cases reported as senile pneumonia.

Senile pneumonia is different from pneumonia in the young. In the majority of cases it is a natural termination of an old person's life. The symptoms are entirely different, and if care is not shown the patient will die before a diagnosis is made.

In cases of fracture or any disease which keeps an aged person in bed there is great danger of pneumonia. It sometimes follows senile bronchitis. In fracture of the hip it is a very common complication and also after ether anesthesia.

Case III, just described, is well worth our careful consideration, because of its similarity to pneumonia. In all cases the urine should be examined to elicit the possibility of renal disease.

Symptomatology

An aged patient in bed, who is rapidly failing, probably has pneumonia. With an increase in the respiration and delirium, the diagnosis is almost certain.

The temperature and pulse rate are usually normal in

the aged, no matter how severe the disease may be. In fact, the temperature is usually subnormal. If the rate is taken at the heart with a stethoscope we may find a quickened heart beat. Owing to the sclerotic condition of the radial arteries the pulse is unsafe as a diagnostic and prognostic sign. It is usually advisable to take the rate at the apex of the heart with a stethoscope.

The findings upon auscultation are usually uncertain. It is customary to find principally the symptoms of pulmonary congestion. Tubular breathing is rare in the aged, or if it is present the signs of edema cover it in our examination.

Diagnosis and Prognosis

The rapid decline of the patient, together with increased respiration and delirium usually make the diagnosis clear. Pneumonia, however, must not be confused with senile bronchitis or pulmonary congestion. These latter conditions are very common in the aged and often termed pneumonia.

A patient with senile bronchitis will converse with you, but a person ill with pneumonia is too sick to talk. In other words, this man is too sick to have only bronchitis and congestion, therefore probably has pneumonia. The border line is not sharp and oftentimes it is only a matter of degree.

I have spoken of the analogy with nephritis. Any one who is following the urinary examinations of his aged patients knows the frequency of pulmonary symptoms complicating nephritis.

Many of these cases of senile pneumonia are in a so-called typhoid state, that is, they have every symptom of that disease. However, typhoid fever is very rare in the aged.

Senile pneumonia usually causes death. The presence

of fever and a quickened pulse is a good prognostic sign, because it indicates more strength in the patient, than a normal or subnormal temperature or pulse.

Cases of the type described in Case III almost invariably die. The presence of blood and casts in the urine is a very serious sign.

Treatment

Keep senile cases out of bed. No matter how sick the patient is it is advisable to force him into a chair. It relieves the circulation and gives him courage to fight the battle. Remember that usually when old persons stay in bed they will not get up again.

If there are no casts in the urine, I prescribe one grain of quinine sulphate every three hours. The presence of casts contraindicates this. Stimulation should be started early by administering strychnine sulphate $\frac{1}{60}$ grain every three hours and later increasing to $\frac{1}{30}$ grain. Spartein sulphate is used if the pulse is irregular. Every aged person should take the amount of alcohol he is in the habit of taking daily, if he is accustomed to taking it.

It is well to use whiskey or brandy early, but if the tongue becomes dry during its administration, it should be stopped. As long as the tongue remains moist alcohol works well. Digitalis does not work well in most cases, and the opiates and coal tar derivatives have a harmful action.

The matter of daily bowel evacuation is very important. The compound rhubarb pill works well, but salines are contraindicated. Autointoxication of intestinal origin developing in the course of pneumonia is a serious complication, and many old men owe their lives to a few compound cathartic pills.

In treating cases of accidents, such as fractures,

sprains, etc., where the patients are in bed, we should see that they are turned on their sides several times a day in order to prevent hypostatic congestion.

We usually have to wait two months before allowing aged patients to go outdoors. However, we are justified in granting them many peculiar privileges which would seem irrational in treating younger people.

CHAPTER XXV

SENILE GANGRENE

This affection usually appears on the toes, rarely on the fingers and occasionally on the legs. There may be premonitory symptoms, such as pain, coldness in the part, and loss of sensation. A dark-colored vesicle forms, accompanied by pain. The surface lesion may extend and remain moist or it may assume a shrivelled, mummified appearance. This classifies it into the dry and moist forms, or we may get a combination of the two. The adjacent tissues are edematous and cold.

The following interesting case of senile gangrene, or arteritis obliterans, which occurred in my practice, shows the result of a gangrenous forearm in which surgical measures were not used.

Mrs. W., aged fifty-three, the last of the Narragansett Indians, had attacks of diarrhea for the past five years. From the character of the feces it undoubtedly was caused by some pancreatic disturbance. She was taken ill in November, 1914, with another attack of diarrhea, and was ill in bed for one week, when suddenly the left hand became white and painful. The next morning she found the left forearm red and numb, as if it were dead. The pain was intense, and besides numbness there was formication, coldness, edema and a marked diminution in the size of the pulse. The following day there was a cessation of the pulse in that wrist, and the forearm was black and gangrenous. She was ill and bedridden for seven weeks, temperature 103° F., and pulse rate 130. A part of this time she was unconscious and at other times delirious. Both legs were badly swollen and there

was a general subcutaneous edema. The diarrhea had ceased after the first day.

In January, 1915, she was able to sit in a chair, but the fever, and pulse rate of 130 continued. The weight of this patient dropped from 220 to 150 pounds. There was a line of demarcation four inches above the elbow, but she was not in a condition which permitted amputation. An operation was later suggested, however, but



Fig. 6. Indian woman who had gangrene of the left forearm, showing the separation from the elbow which was made by Nature. This photograph was taken six years after the attack.

the family refused to consider any surgical procedure. In March, the swelling began to leave the legs and her general health was better so that on the first of April, 1915, she was able to go outdoors. The gangrenous forearm was gradually separating from the arm, and showed the radius and ulna with the periosteum separating from the adjacent healthy bones. She continued to improve in her general health and in June, seven months after the onset of the disease, I felt that she might be able to take an anesthetic safely. The urine

had previously been examined several times and was found to be normal. I examined the urine several days in succession and on the fifth day, after previously failing to find glycosuria, discovered 3 per cent sugar. I decided to use gas-oxygen anesthesia and operate but the family again refused to allow any surgical procedure.

The arm continued to slough and in July I sawed the gangrenous forearm five inches below the elbow, leav-



Fig. 7. Same patient as Fig. 6, showing perfect amputation of the forearm by gangrene without surgical procedures.

ing the radius and ulna exposed. No anesthetic was required for this procedure. In August I removed two inches more of these bones. She continued to improve, regained her weight of 220 pounds and was able to work.

In October, she fell and broke the radius segment which was thus severed from the stump of the arm and in November the other bone was broken in a similar manner. This left a stump with two discharging points, which healed in three weeks, and is as perfect as any surgical operation could have left it. The flap made by Nature

was exactly the same as if the flap-operation had been performed by a surgeon.

Today, six years after this illness, that patient is in better health than she had been for several years and able to do all of the work in her home.



Fig. 8. Foot, showing how Nature separated the gangrenous part from the healthy tissues. There are two places still unhealed. The patient was a man, aged 64.

Sometime ago I saw a man of sixty-four, who had gangrene of the left foot. He had diabetes for several years and had suffered a great deal from carbuncles. Gangrene developed suddenly in one foot but he was in poor condition for an operation. He had been in bed

for a long time, had many bedsores, and his general condition was very poor. He lingered for months in bed, finally the gangrenous part of the foot separated from the healthy tissues, and, as seen in the accompanying photograph, Nature made a good amputation. This man at present is able to walk with the aid of crutches. There are two small places on the foot that are not completely healed but the case is similar in many ways to the one first described.

In some cases of senile gangrene the patient will first feel pain in the extremities, perhaps localized in a single finger or toe, and often experience a pricking sensation or numbness. The pulse disappears in the affected part and in the course of a few hours this part is dead.

Before gangrene has fully developed the part may have a blue color. Then a small vesicle develops and in a few hours several vesicles appear which finally coalesce. Considerable pain is felt before these vesicles burst and even after they have ruptured. The skin beneath the vesicles is red or blue in color, its surface is moist.

If the surface is not moist it may have a shrivelled appearance and if we make an incision, little or no blood escapes. It has been said that the dry form of gangrene is more common in the poorer classes who are underfed, while in robust persons the moist form is more common.

The adjacent tissues, in any form of gangrene, are swollen and red or blue in color. My patient was extremely ill, with general symptoms. She was unconscious for several days, had an extremely high fever, rapid and thready pulse, extreme prostration and a cold, clammy perspiration on the skin. The excretions were of a fetid odor.

In time, as this period of fever and prostration ended, she went into another stage, which was the period of

reaction. Her general condition improved and Nature seemed to grant a truce.

The symptoms left as they came, and she finally was able to walk outdoors. There was an inflamed border above the gangrenous part and the line of demarcation was found.

In senile gangrene we may have an extremity which has lost sensation for several days before any sign of gangrene develops. The fact that there is coldness of the part and that the arterial pulse is like a piece of string, gives evidence that gangrene is developing. It may be caused by several conditions and anything which produces thrombosis like atheroma will cause endarteritis obliterans.

Diabetes perhaps is the most frequent condition associated with gangrene, but nephritis may cause it in rare instances. Syphilis affecting the vessels is a frequent cause.

In cases of senile gangrene the affected part should be elevated and the patient given a diet consisting of milk and cereals. Support is given by means of strychnine sulphate, $\frac{1}{60}$ - $\frac{1}{30}$ grain every three hours if the heart shows signs of weakness.

A wet dressing of the alkaline antiseptic solution or aluminium acetate solution, diluted by adding a tablespoonful of either solution to a tumbler of water, may be used. It is essential to get free elimination through the bowels as the system is loaded with toxins as a result of this acute process.

When the line of demarcation has formed surgical procedure should be resorted to without delay. Gangrene is a very serious affection. It is interesting to discover, since reporting these cases, several cases treated by physicians many years ago which were similar to these and patients lived useful lives for a long time without having undergone an operation. There is no question,

however, that surgery is the best treatment in most cases and must be resorted to when the line of demarcation forms.

Old persons easily develop gangrene of the toes from the most trivial cause. Sometimes an injury may cause it; other times, perhaps the twisting of a nail in cutting it may produce gangrene. Aged patients often suffer from long, twisted nails and they should not be touched since the slightest injury may cause gangrene.

CHAPTER XXVI

SENILE CHOREA

A man, aged seventy, consulted me for pains in the limbs and restlessness at night. A member of his family informed me that he was becoming impressionable, forgetful and inattentive, and for the past few weeks gradually developed a peculiar twitching in one arm and at times could not pick up an object, the jerking of the muscles causing him to drop his food or spill his milk. The movements of the arm were incoördinate, grotesque and tossing, first flexion, next extension, which were followed by rotation. Later the choreic movements affected the face, and involuntary jerks of the shoulders and neck were noticed. The leg on the same side was the next part to be affected, which caused the gait to be very clumsy. Eyesight was normal and mentality good; speech was imperfect, however, and at times he was unable to articulate, which was undoubtedly due to the choreic muscular action. The knee reflexes were normal and there was no true ataxia, the movements being involuntary and voluntary motion intensified the jerking, but ceased during sleep.

Examination of the urine revealed no abnormality, in fact, he seemed in excellent condition from a pathologic standpoint, because no evidence of organic disease was discovered, and the ultimate recovery of the patient was proof against the presence of a subcortical lesion. He was given arsenic trioxide, grain $\frac{1}{100}$ in tablet form, before each meal and the condition gradually improved so that at the end of four months he had completely recovered. It did not leave him in a nervous state, muscular action returned to the norm of senility, and he

showed no evidence of cardiac weakness as a result of chorea. It is now three years since the attack occurred and he has had no recurrence of the symptoms.

In some respects chorea in the aged does not differ from that observed in younger individuals; it may be purely a functional disorder, with symptoms of chorea minor which last from one week to several months; it may be due to a subcortical lesion and follow hemiplegia or it may be hereditary. The functional type usually ends in recovery in two weeks to four months, and a case like this has been reported in a man eighty-six years of age. We may have to deal with Sydenham's chorea. Charcot was inclined to consider all cases of senile chorea incurable.

Senile chorea is not likely to cause heart complications or rheumatism, but sometimes the movements become violent enough to cause the patient to stay in bed, and on account of these incessant movements he becomes very thin and is apt to develop sores of the skin, the result of which may be infection, excoriations, ulcerations and abscesses. Again, in old age chorea may become chronic; the motor troubles are those of ordinary chorea, but they are, however, slower, less extensive and more easily controlled by the will. Chronic chorea has a slow and progressive course, may not subside, and is often accompanied by mental decay.

In some cases of senile chorea it is possible to elicit a history of previous attacks of rheumatism, but, in old age, chorea is usually not associated with any other disease and the heart complications so often seen in the young are rarely observed.

Chorea Gravis

A man, aged sixty-one, suffered from senile chorea, which presented little difficulty in diagnosis. What

struck me in my observation of the case was the severity of the disease. The movements were violent and did not stop at night; in twenty-four hours he performed hundreds of involuntary movements; he tossed about the bed, his head beat the pillows, his face made various grimaces and it was apparent that almost every muscle of the body was affected. The muscles of the tongue and pharynx were involved, and he experienced difficulty in deglutition, was unable to utter more than a few words, and in time became unable to speak at all. The skin, over the elbows, spinous processes, hips and heels, was erythematous, and later he developed numerous bedsores.

Control of the rectal and vesical sphincters was lost, and he remained in bed, a helpless man, requiring constant attention on account of the sphincter paralysis. The pulse was quick, and insomnia became complete. Urinary examination was negative; loss of flesh became more rapid, heart action was increased, and the old man died of exhaustion.

In this case, it will be noted that the man died from the disease itself and not from a complication. Complications of chorea are rare in old age, but it is not uncommon to see cases which have a malignant character; treatment seems to be useless then and it is very difficult to relieve insomnia and violent movements. This severe condition, according to Charcot, is a status choreicus, resembling the status epilepticus, but we are not able to find the reason of this gravity at the postmortem examination.

Nephritis and Senile Chorea

Senile nephritis, associated with high blood pressure, is often accompanied by choreiform movements. It may be localized, for instance, one arm may be affected, or it may involve several muscles. I recollect one case of a

man of 80 who had every symptom of Sydenham's chorea, which was due to nephritis and improved when proper treatment was instituted. These cases may be associated with psychosis, which might lead to a diagnosis of chorea gravis. The symptoms, however, usually wane when free elimination through the emunctories is started and dietary treatment directed to nephritis.

In Bright's disease, this condition is the opposite of the paralyses which so often complicate senile nephritis. It is probably not due primarily to uremia, rather to cerebral congestion, which is secondary to the kidney lesion. Sometimes, in nephritis, the choreiform movements end in paralysis, with accompanying mental decay, and when psychosis develops it usually indicates a fatal end of the case.

Habit Chorea in Institutions

Many cases of senile chorea are very mild in character and involve but one arm. The movements are not severe, and at times they disappear for a few hours, only to return. In institutions for the aged, the suggestibility of some old persons who imitate others' disease is very marked, and I have seen cases of apparent senile chorea develop after the appearance of one case in an institution. Of course, the cases which developed were merely imitative, and it was an impossibility to cure the old persons of their habit until the one who was actually suffering from the disease was transferred to another part of the institution. Another case of apparent chorea developed in a woman seventy-five, who had all the symptoms of the disease. Her granddaughter was living with her, and since the little girl had suffered from St Vitus' dance, the old lady had the symptoms also; the choreiform movements became more violent, it was impossible to cure her until the little girl was removed from her care,

and only several weeks after was the condition actually cured.

In treating these cases of habit chorea, harsh measures are at times necessary; punishment may be resorted to and if this is not successful, separation from the person actually diseased must be practiced. It is erroneous to believe that these habit conditions are harmless, because in time they develop into chronic conditions which are incurable. Physicians who are treating old patients appreciate these statements, because psychic troubles are often very difficult to correct.

Treatment

True senile chorea should be treated with arsenic, and the method I use consists in prescribing tablets containing $\frac{1}{100}$ grain of arsenic trioxide, before each meal and at bedtime. Fowler's solution may be used in five minim doses three times a day, but it is essential to look out for the secondary effects of arsenic in the aged, as elimination is very slow, the drug is apt to have a cumulative action. In the aged, the secondary effects of drugs are fully as important as their primary action, the bowels should be kept open by free catharsis to prevent this cumulative effect. The symptoms of arsenical poisoning are first a puffiness of the lids and coryza, and when these symptoms are noted arsenic should be discontinued for a few days. Ordinarily, at the end of three weeks, I discontinue arsenic and replace it by elixir of iron, quinine and strychnine phosphates, administered in doses of a dram before each meal; at the end of two weeks arsenic is resumed. In convalescence, elixir of iron, quinine and strychnine phosphates makes an excellent tonic, but its slight constipating effect must be overcome by means of cathartics.

If nephritis is the cause of the condition, it should be treated by dietary methods and free elimination through the emunctories. A saline laxative may be prescribed each morning before breakfast.

CHAPTER XXVII

PRURITUS SENILIS

Senile pruritus, localized or general, is one of the most annoying conditions of old age and one of the most difficult to treat. Ordinarily, when I see a case, I think of three groups, that is those of (1) senile diabetes, (2) senile nephritis, or (3) unknown cause. However, there are many diseases in old age which will cause pruritus, such as jaundice, leukemia, pseudoleukemia, or it may come from lack of proper hygiene of the skin, woolen underwear, or there may be some psychic cause for it. In institutions, it is not uncommon to find old people who scratch themselves because they have seen a case of pediculosis. In the army, suggestions of cases of pediculosis would cause many soldiers to itch. At present, I have a patient, a man aged eighty-five, who has had senile pruritus for several months. The itching becomes worse at night, the skin is dry, as we usually observe in old persons, it not being properly nourished with blood. The patient has no evidence of organic disease; his sleep is disturbed by itching, but as he dozes off in his chair several times a day, he would not sleep well at night. I prescribed two compound rhubarb pills in the evening for constipation and as his tongue was red and the papillae prominent, gave him the following prescription:

℞	Tincturae Nucis Vomicae	
	Acidi Hydrochlorici diluti	āā3 ij
	Elixir Digestici Comp. q. s. ad.	℥ iv
	Sig: Teaspoonful in one-half wineglass of water before meals.	

Externally, I prescribed a mixture of the higher phenolic ethers, with essential oils, and soap liniment as a base. It gave him immediate relief, but it was necessary to continue its application several times a day.

Senile pruritus may be localized, as pruritus ani, scroti or vulvae, or may be on any part of the body. Senile diabetes will often cause these local disturbances and attention to the disease may relieve the itching. It is not uncommon to find that pruritus ani comes from oxyuris vermicularis and treatment must be directed to this cause. Oxaluria may be a cause of pruritus vulvae.

Glycosuria in the aged is often a normal degenerative change and may only be transient. I have a case of this kind; glycosuria lasts only a few days, but while it does, it is accompanied by a severe pruritus vulvae. Diabetes will cause an intense itching of the skin which is usually localized. A careful observer will often recognize diabetes in cases where there are no other symptoms to point to the disease. Eczema is common in old age and causes intense itching.

Usually, pruritus accompanying senile nephritis is general, but it may be localized. One of the first symptoms of nephritis is an itching of the skin which may cause the patient to think that dandruff is falling on the back of his neck. Uremia may have pruritus as its chief symptom and the patient may scratch himself so violently that it causes bleeding. It is not rare to find the body covered with sores, the patient literally digging into the skin with his nails. Usually the itching is worse at night and may cause so much suffering that the old man's strength becomes exhausted and this may be the beginning of a serious physical breakdown.

Occasionally, the itching of the face becomes so severe as to make the skin very red, suggesting facial erysipelas. Seborrhea capitis may cause itching of the scalp

and the scales will fall upon the face, neck and chest, causing dermatitis.

The anatomy of the skin in old age shows why pruritus is common. The lumen of the arteries being considerably narrower in senility, the skin is poorly supplied with blood and the dermis becomes atrophied.

Subcutaneous fat is wasted, the areolar tissue becomes fibrillated, connective tissue is loose, and elastic fibers waste; as a result of these various changes the skin is dry, loose and flabby. Although the blood supply of the skin is poor, there may be areas of local passive hyperemia. The degenerations of the nerve terminals cause many sensory disturbances, such as "crawling," pricking, itching, sensations of heat or cold. A patient complained to me that his son had placed pins in his neck.

The sebaceous glands are often atrophied and they always contain less liquid than in adult life.

There is a form of glossitis—senile pruritus of the tongue—which is characterized by itching and burning of this organ. The tongue may be quite swollen as in a patient I saw some time ago. She had chronic uremia and suddenly her tongue become swollen, this swelling being accompanied by burning, itching and inflammation. She was relieved in three or four days, but all patients are not so fortunate.

There may be a psychic form of pruritis senilis; in institutions, when a person begins to itch, it will soon spread to all those who are in the same ward. The nervousness produced by lack of sleep due to the itching, in turn, makes the condition worse. It is a vicious circle as the more the patient scratches himself, the more irritated the skin becomes, dermatitis develops, and he has an eruption which in itself is very painful.

Senile pruritus affects persons who are apparently in good health. I had a patient, a woman aged 75, who developed pruritis of the forearm, which later became

general. She was in excellent health in every other way. The itching was intense and she suffered during several months, used every remedy that I could suggest and consulted dermatologists, but it was of no avail. Finally, after months of agony, relief came.

Predisposing causes in persons who have no organic disease are indigestion, constipation, improper diet and lack of proper care of the skin. Most old people do not enjoy bathing and many go several weeks without a bath, although they will not admit it. This applies to all classes of patients, they may have elaborate bathrooms and yet not bathe oftener than once a week. Old persons are apt to avoid anything which requires any degree of exertion.

There is a form called *pruritus hiemalis* which occurs during the cold months of the year.

A peculiar form of *pruritus* is sometimes observed in individuals who are effected by the presence of certain plants in the house (such as Chinese primrose). I have seen some cases of *pruritus* which were merely due to eating pork.

We must give a guarded prognosis in all cases of *pruritus senilis*, although some cases are curable. Usually it is chronic and incurable, but some cases are relieved by an improvement of the general health. People have been known to commit suicide because of the incessant suffering caused by itching.

Treatment

If we are able to discover a cause, this cause must be suppressed. If it is not possible to ascertain a cause, we must endeavor to improve the general health. The diet should be regulated, laxatives used if there is constipation; if the patient is robust, a saline laxative may be given each morning; if physically frail, compound

Ichthyol ointment, 2 per cent, or in combination with calomel ointment, often works well. Oleate of mercury, a 5 per cent solution of oleate of mercury in oleic acid, will often be of benefit. Unguentum Conii of the old British pharmacopeia, or in combination with carbolic acid, will often check pruritus ani due to hemorrhoids or fissures. Cocaine or novacain solution will often improve the condition temporarily. It may be used as follows:

R	
Cocainae	gr. v
Mentholis	gr. x
Petrolati	℥ j
℥. ft. ung.	

I have seen the high frequency current act well in some instances, a surface electrode being applied for seven or eight minutes over the affected parts, about three times a week. The current is not applied strongly, but gentle stimulation is given. Diathermia works well, no matter what the location of the pruritus is. A piece of tin foil is applied over the anus, and a large one over the pubis. From 300 to 500 milliamperes are given and the treatment should last for a half hour. Diathermia drives a new blood supply to the affected areas and will give permanent relief in many cases. It may be used in combination with the surface electrode, but the method of deep penetration is better.

Many cases of pruritus ani are due to improper care of the anus. A man may wash his face twice a day, but not wash his anal region oftener than once a week. Again, many of the toilet papers used are irritating to a tender skin. There is an excessive perspiration in this part in many people and the excretions are often of an irritating nature. Proper hygienic care, i. e., washing twice a day with cold cream soap and applying unguentum aquae rosae after each cleansing, the use of a high grade, soft paper after defecation, will often cure the

condition. In very obstinate cases, thorium may be applied externally and radium applications may help a great deal.

Pruritus vulvae will often be relieved by douches of the following powder in solution:

℞	
Phenolis	℥ j
Eucalyptolis	℥ ss
Olei Menthae Piperitae	℥ j
Aluminis	℥ iv
Acidi Borici	℥ xvj
℥. ft. Pulv.	
Sig: One or two teaspoonfuls in a quart of hot water as a douche twice a day.	

This is very soothing and cooling and most women find it a great comfort. The douches must be taken in a reclining position. As the average woman uses a douche in a sitting position, it is valueless. If there is much inflammation on the outside, the following ointment may be applied to the vulvae:

℞	
Mentholis	gr. v
Unguenti Aquae Rosae	℥ j
℥. ft. ung.	

The powder described above is useful where an inexpensive, effective lotion is necessary for general use on the body. It may be used in various dilutions and can be applied to the body with a soft sponge.

Recently, I have been using a solution of the higher phenolic ethers, aromatic bodies and esters, with excellent results. One part by weight of this preparation has the same antiseptic value as forty parts of weight of pure phenol. It is not irritating and is very stimulating to the tissues. When applied to the skin its anesthetic action will be manifest in two minutes and when applied once a day for several days it will often improve the condition. When the disease is widespread, I employ the phenolic ethers and essential oils in a ten per cent alco-

holic solution. The effect lasts several hours and may be fortified by the following ointment:

R	
Mentholis	gr. xx
Phenolis	M. v
Camphorae	gr. x
Petrolati	℥ ij
℥. ft. ung.	

I have seen cases so severe that the patient had to sit in a bath tub for relief, in such cases a bran bath is often useful. Unguentum diachylon compound can be used as an ointment to cover larger surfaces. It is often necessary to prescribe large doses of bromides internally to alleviate the pain, but opiates usually aggravate the condition. Sometimes a 2 per cent solution of chloral hydrate used externally will suppress the itching; choral has a marked antiseptic and anesthetic action on the skin.

In France, the hydrotherapeutic treatments at Neris, Plombières, Uriage, Luchon and Cauterets are of value. In very rebellious cases it is necessary to resort to radium therapy.

Care must be exercised in the latter; radium should be applied for a short time and a reaction awaited. A flat applicator of 10 mg. of radium element should be used, screened only with rubber dam, and it should be held over one area for ten or fifteen minutes. The entire area which is affected should be covered in this manner, but a second radiation should not be given until the result of the first treatment is known.

If the symptoms have not subsided in three or four weeks, a longer application should be given with a filtration of $\frac{3}{10}$ mm. of aluminum, but it would not be well to employ radium longer than twenty minutes in any area. In employing radium around the anal or scrotal regions we must not expect the reaction to be immediate; in some cases it will occur several weeks after the treatment.

The results obtained with x-rays in the various forms of senile pruritus, are sometimes remarkable. Small doses without filter are employed and 3-4 units are used; sometimes one exposure is sufficient; other cases require two or three treatments at an interval of two or three days. These small doses give much better results than the larger ones.

CHAPTER XXVIII

SENILE PROSTATIC HYPERTROPHY

CASE I.—A man, aged seventy, complained for a few months that he was disturbed several times during the night to urinate and at first noticed that he had to make an effort in order to void. Later he found that during the night he was obliged to walk the floor a few minutes in order to start the flow, while during the day there was no difficulty. In the course of a few weeks, however, he was aware that even during the day he could no longer void freely and the bladder became distended, he experienced retention of urine.

In the middle of the night he felt an intense pain in the abdomen, and when I arrived I saw the pitiful condition he was in. I catheterized him with a flexible metal catheter and prescribed a four-grain tablet of chromium sulphate to be taken every three hours. He was also given two drams of magnesium sulphate and put on a milk diet.

It was necessary to catheterize him for two days, but on the third day he was able to void quite freely. He improved on the chromium sulphate treatment and for the past year has not suffered from his prostatic hypertrophy.

CASE II.—A man, aged eighty, felt a sudden pain in the abdomen and on examination the bladder was found to be greatly distended. He was catheterized with a rubber catheter and the family were taught to use it. He was given the chromium sulphate treatment and in two weeks could void freely and for several months up to the time of

his death, due to other causes, he did not experience any difficulty in urinating.

CASE III.—A man, aged sixty, had retention and it was necessary to use a rubber catheter. It was discovered that his prostatic hypertrophy was due to syphilis and on a potassium iodide treatment he recovered. In time, however, he became dissatisfied with his condition because the symptoms recurred, and insisted upon an operation, which was performed against my advice; he was operated upon and died the following day.

CASE IV.—A man, aged seventy-five, had chronic syphilis. At times he was unable to void freely, but was promptly relieved by potassium iodide.

These cases represent types of senile hypertrophy of the prostate. It is rather strange that a senile prostate hypertrophies while almost every other senile change is degenerative or atrophic. The gland may be enlarged uniformly or the middle lobe alone may be affected.

As prostatic hypertrophy is a normal senile change, to a certain degree, an enlarged prostate may not interfere with functions that are normal to old age. When this gland, which has undergone hypertrophy, becomes congested, it causes a train of disorders which can be promptly suppressed if proper treatment is given.

The bladder distends and then cystitis may develop. The retention due to the enlarged prostate may cause general toxemia that is not associated with nephritis, and may also cause cystitis or pyelitis.

Syphilis may be the cause of hypertrophy and if a history of this disease is given, specific treatment should be prescribed.

Nephritis, in my opinion, is a common cause of prostatic hypertrophy. When these patients, who have chronic nephritis, suffer from an exacerbation of the disease, the prostate may show acute symptoms due to con-

gestion, which may cause retention. Treatment promptly given will usually yield good results.

I have treated about 200 cases of senile prostatic hypertrophy and never had recourse to the so-called "catheter life" for over two weeks at a time and have never advised an operation or had a patient who has been operated upon for this condition. It is not my intention to deprecate surgery, in particular prostatectomy, because I believe the latter operation to be very necessary and successful in a great many instances.

Nevertheless, with electric treatment and medicinal treatment I have kept these old patients in a comfortable condition. I have been greatly impressed by the simplicity of the treatment in some cases. An old man who had syphilis complained of symptoms which were found to be due to prostatic enlargement and the only medicine prescribed was a saline laxative which relieved the bowels and removed the toxins from the system. This man has had several attacks, but each time I found that free catharsis relieved him.

A man, aged seventy, found he was obliged to urinate every hour during the day and also had hematuria. He was given an alkaline mixture containing fluid extract of hydrastis, pancreatin, potassium carbonate and fluid extract of rhubarb. This mixture with a saline laxative apparently relieved him.

Some cases due to syphilis, strange to say, do not always do well on either mercury or potassium iodide. I have made the statement that some of the best results in syphilis have been obtained with remedies other than the iodides, mercury or arsenic. Many of these cases will be relieved by six minims of fluid extract of cascara in syrup given three times a day.

No doubt in private practice a physician does not have to deal with the severer types seen in hospitals, therefore, his observations do not always hold good in a gen-

eral way. I am convinced, however, that much can be done for senile prostatic hypertrophy and if this treatment was followed I believe prostatectomy would be unnecessary in many cases. It is not my purpose to give a complete consideration of the subject, my plan is, as in the other sections, to give principally my personal experience.

Treatment

As I have written above the results of treatment by means of the simplest remedies are surprising. A great many cases which we see are merely due to congestion, and a cleaning of the intestinal tract by a saline laxative relieves the prostatic condition in so far as it leaves it in a state that does not cause much discomfort even though hypertrophy still exists.

When true prostatic hypertrophy is present I doubt whether any treatment except a surgical one will reduce this enlargement. However, the prostate can be very large without causing symptoms unless it becomes congested. It is this type of case that usually manifests prostatic symptoms and in time, if neglected, becomes chronic and hopeless to treat.

A man who has prostatic enlargement, is ill, bedridden and obliged to be catheterized three or four times a day, is given one tablet containing four grains of chromium sulphate every three hours. If it is necessary to catheterize him, I try first a rubber catheter and if this fails use a flexible metal catheter rather large in size. Many times I have found that a large catheter would go by the obstruction while a smaller one would fail. The large catheter is left against the obstruction for a few moments and usually will go into the bladder without difficulty. Very seldom does it cause hemorrhage, but I do not think

that the hemorrhage is always a bad sign. Many times a slight bleeding relieves the patient.

If the old man is suffering intense pain due to frequent urination, I give every two or three hours a tablet containing $\frac{1}{24}$ grain of heroin hydrochloride, or diacetylmorphine hydrochloride. If necessary six of these tablets may be taken in two hours. Heroin works well with aged patients and alleviates the pain.

I prescribe, with chromium sulphate the following:

℞	
Fluidextracti Juniperis Communis	3 ij
Fluidextracti Buchu	3 i
Fluidextracti Uvae Ursi	3 i
Fluidextracti Hyosecyami	3 ss
Glycerini	3 i
Potassii Bromidi	3 ij
Potassii Acetatis	3 ij
Elixir Aromatici q. s. ad.	3 iv
Misce et Sig.: Take one teaspoonful in one-half wineglass of water every 3 hours.	

If there is frequent and painful urination, 2 minims of tincture of cannabis indica may be added to each teaspoonful of the above mixture.

If there is cystitis and accompanying nephritis, it may be well not to use chromium sulphate because it is somewhat irritating to the kidneys. In these cases I prescribe the following mixture:

℞	
Sodii Bromidi	3 ij
Potassii Acetatis	3 iss
Fluidextracti Pareirae Bravae	3 ij
Glycerini	3 iv
Elixir Aromatici q. s. ad.	3 iv
Misce et Sig.: Teaspoonful in one-half wineglass of water every three hours.	

This has a good effect on the mucous membrane of the bladder, relieves the pain and makes micturition less frequent.

In these cases of dysuria a saline laxative will often

work well. Free elimination through the intestines is one of our best weapons in the medical treatment of prostatic enlargement.

This treatment will usually relieve the old men so that they will void freely, and it will make the use of the catheter unnecessary. Further treatment consists, especially in obstinate cases that do not yield, of diathermia treatments given with a special type of apparatus, the Telatherm apparatus made by Wappler, with a Monae Lesser type of electrode, which has a metallic surface for the prostate. It is inserted into the rectum, and a piece of flexible tin applied over the pubis, the



Fig. 9. Monae Lesser rectal prostatic electrode.

treatment lasts one-half hour, using the greatest amount of current that does not cause discomfort.

Telatherm (Gk. Tele—at a distance; therme, heat) gives a high frequency current which has an absolutely smooth discharge and this discharge can be varied by means of a milliammeter and produce from very mild warmth to a great amount of heat. Diathermia treatments (Gk. dia, through; therme, heat) are given by the Telatherm machine by means of two poles on a D'Arsonval current. One pole is attached to the electrode in the rectum and the other pole is attached to a piece of tin foil about three or four inches square which is placed on the abdomen in the suprapubic region.

Another method consists in applying a flexible metal electrode 4 x 6 inches square on the abdomen in the supra-pubic region and another 3 x 4 inches square over the lower part of the spine. The treatment consists in using the electric current to the point of discomfort and lasts one-half hour. It may be well to continue the treatments during several months, giving them every other

day for a month and then two or three times a week for six months, resuming them after a rest of three months, continuing the last treatment for a month. The amount of current used is registered on the milliammeter of the



Fig. 10. Telatherm apparatus.

Telatherm apparatus and in the next treatment the same amount can easily be given. Diathermia treatments apparently are beneficial in many cases and I feel confident that many of my patients today live comfortably, who would have been obliged to have prostatectomy performed if they had not been used.

There is a period of warning in prostatic hypertrophy, several years elapsing before the serious complications develop. In this stage, if the disease could be discovered, diathermia treatments would be advantageous and prevent it from pursuing a chronic course. Usually the first treatment will relieve patients of the sensation of congestion they experience. The heat of the Telatherm relieves the congestion in the tissues, through its stimulating action on the flow of the blood stream.

With diathermia treatments practically no heat is wasted outside, it penetrates the internal tissues. The Telatherm produces about two million oscillations a second and does not injure the deeper tissues. The effect of diathermia on the prostate is to drive away the old blood which is replaced by new blood. In this respect it resembles the hyperemic treatment, but its aim is to relieve the congestion and improve the tone of the muscles.

The results of the treatment have been encouraging, but if improvement does not take place in a few months, operation is necessary. Diathermia may temporarily relieve the congestion accompanying adenocarcinoma of the prostate and improve inflammatory conditions of the bladder.

If diathermia does not prove efficient, I employ a vacuum electrode from a Campbell Model "E" coil and give a mild current for five minutes every other day. It is not advisable to allow this electrode to remain in the rectum over five minutes because the heat may cause a piece of mucous membrane to come off on the electrode. This form of electric treatment has also been successful in some instances.

Carcinoma of the prostate has been successfully treated by radium. Doctor Hugh Young has been using it to advantage as has Doctor B. S. Barringer and others. There are several methods of application. Fifty to one

hundred milligrams of radium element are usually sufficient and it should be screened with two millimeters of metallic and one millimeter of rubber screening. The crossfire method can be used and an exposure from four to six hours repeated three or four days in succession.

Doctor Barringer¹ in treating carcinoma of the bladder has performed a laparotomy, opened the bladder and treated the cancerous surface for three hours.

Doctor Barringer also treated the prostatic condition by means of a needle containing 50 to 100 millicuries of radium. The needle was inserted into the perineum between the urethra and rectum and guided by the finger in the rectum until the end of the needle had passed into the middle lobe of the gland.

In some instances the results are encouraging and many of our best surgeons have successfully used radium, I believe, in many cases of prostatic hypertrophy, that the so-called "catheter life" and prostatectomy are unnecessary. There comes a time when operation may be a necessity, but I have never seen a case yet that medical treatment or electric treatment could not relieve to the degree of giving comfort.

Perhaps the patients do not feel perfectly well; the majority of cases of prostatectomy suffer months after their operation has been performed. The surgeon does not see the patient after his discharge from the hospital and writes on his index card "uneventful recovery." The family physician is the one who has to deal with him after the operation.

One of our authorities said "the unsatisfactory results of medical treatment have removed prostatic hypertrophy from the field of the physician to that of the surgeon." My limited experience in about 200 cases,

* The Treatment by Radium of Carcinoma of the Prostate and Bladder. Preliminary report. Jour. Am. Med. Assn., Nov. 11, 1916, No. 20, pp. 1442-45.

leads me to believe that the above statement is not correct. Medical treatment has its place in prostatic hypertrophy and it is a worthy place, provided the cases are seen early.

CHAPTER XXIX

FUNCTIONAL RECUPERATION FOR SENILE PARALYSIS

A brief study of the method of "Functional Recuperation" of Dr. Gabriel Bidou, Paris, will not be out of place here since the technic applies to many types of paralysis, and is especially useful in dealing with senile patients who are suffering from hemiplegia or paraplegia, who can be made effective again by this method. I am grateful to Dr. Bidou for the information he has given to me and for the careful demonstrations he has made for me in his hospital.

There are many residual paralyses in old age, sometimes following cerebral hemorrhage, uremia, diabetes, senile myelitis, and many other conditions. We frequently see old men who have one or both legs paralyzed and they are bedridden or wheel-chair patients. Through Dr. Bidou's technic carefully followed, many of these patients can be made to walk again, and, in many instances, they can become effectives.

Dr. Bidou has charge of Dr. Babinski's clinic in the Hôpital de la Pitié, Paris, and there one can see the remarkable work he is doing.

Functional recuperation is defined by Dr. Bidou as a method consisting in utilizing the normal human segments in favor of the defective ones, according to the rules of physiology on the one hand, and of mechanics on the other. It is not orthopedics such as we have been accustomed to see, used by orthopedic mechanics; it is a very scientific application, therefore a very precise one, of the general laws of gravity, of the transmission and transformation of movements of the human machine.

To quote Dr. Bidou, "Let us imagine the cripples as any kind of machine in which certain organs will have to be repaired or replaced. A list of these repairs will be the result of careful observation, the balance of the physical, physiological or moral resources will be established, it will become easy for the physician, who is a human mechanic since he is an anatomist and physiologist, to decide which muscle has to be replaced or helped, which part of the structure has to be re-enforced or supplanted.

"As a matter of fact, orthopedic instruments being inspired by the workings of the arsenal of general mechanics can replace a muscle by a spring in most cases."

Dr. Bidou takes as an example illustrating his theory, the case of hemiplegia where we find that the limb is elevated by means of an artificial psoas magnus and quadriceps muscle, which is attached on a belt to its superior end and inserted at its inferior end to the fore part of the foot. This artificial muscle will have a force of three kilograms. This spring passing in front of the coxo-femoral axes of oscillation and of the knee will draw toward itself, that is in front of the frontal plane, the limb which it propels, on condition, of course, that the latter has been liberated from the weight of the body. Actually, the adherence of the human body to the earth is function of the weight, divided by two, the two lower limbs.

If one leans on one lower limb alone, the human weight will bear in its entirety on it; the other being relieved from the adherence to the earth, will no longer have any weight; it will remain attached to the coxo-femoral articulation; therefore, a comparatively small traction will suffice to overcome the inertia and propel it.

Re-education will teach the patient to throw himself forward and to immediately look for his bearing. In this way, he will have gone half a step; repeating the

same effort with the other limb, he will have gone another half step, and the complete step will then be accomplished.

What has been said of the control of muscle can be demonstrated in the substitution of the structure itself.

When the control cannot be effected between the brain and the segments in the vicinity of the defective part, on behalf of the latter, it is possible to establish a complete automatism. One no longer uses the paralyzed limbs, except as sheathed mandrels of an automatic mechanical apparatus.

Provided with his apparatus of artificial musculature, the paralytic rests on the ground on a quadrilateral base of sustentation. The base is inscribed between the four following points: two feet and two canes or crutches.

The center of gravity passing through the vertex, falls on the point of intersection of the two diagonals uniting the angles of the quadrilateral. The traction between the two chief points of insertion, superior and inferior, tends to maintain the body in an attitude of vertical rigidity. It helps to correct the weakness of the knee joint, which has a tendency to bend.

When the patient desires to move, he carries himself lightly on one side, thereby transforming his quadrilateral base of sustentation into a triangle inscribed by two canes and one foot. The tripod remains sufficient for the support of the body. The foot opposite to the side toward which the patient has turned, being liberated, releases the adherence to the ground. At this moment, the springs being no longer held, shorten, and the limb is brought forward. The patient rests on it, reconstitutes a new triangle with this support and alternately progresses from one triangle toward the other.

The re-education of paralytics is easy with this mode of muscular action. This apparatus is of great value in treating senile patients since we see in old age so



Fig. 11. Patient who had anterior poliomyelitis several years ago and is now paralyzed in the muscles below the thorax. This photograph illustrates the apparatus made by Dr. Bidou, which enables the man to walk. By a special clamp at the knees and hips, he is able to sit down.



Fig. 12. Showing Dr. Bidou's apparatus for hemiplegia. Paralyzed muscles are replaced by springs.



Fig. 13. Another case of lateral sclerosis, showing Dr. Bidou's apparatus, consisting of springs which replace defective muscles.

many cases of hemiplegia and paraplegia, and a simple, inexpensive apparatus will enable the old person to walk again or to use his arms. A study must be made of each case and the muscular movements must be analyzed.

Relying on observation of this type of artificial musculature, according to Dr. Bidou, it is possible to con-

ceive the application to the upper limbs, isolated or associated to the movements of the trunk, etc. Therefore, it becomes possible to repair many muscular deficiencies, locomotor or other. The observations of the physiology of movement, combined with the mechanical observations of the levers and of their associated or opposed actions, has determined the method of relief to defectives, termed by Dr. Bidou, "orthopédie instrumentale."

He states that each case is a law unto itself and that industrializing of orthopedic instruments is impossible.

The patient represented by Figs. 11, 15, 16 and 17 is very interesting. This



Fig. 14. Apparatus for paralysis of the left arm.

man had anterior poliomyelitis several years ago, with the ultimate result of paralysis of the muscles below the thorax. Dr. Bidou arranged the apparatus for this patient, who today has charge of his research laboratory, is able to walk, can sit and rise from a chair, and when



Fig. 15. Patient described in Fig. 11, taking a walk in city attire. One sees clearly the position of forming a triangle. The left cane will rest in front of the left foot for the next step.



Fig. 16. Same patient, acting as mechanic. The weight of the body on the machine is sufficient to assure the equilibrium. This man is able to set up an apparatus of precision.

demonstrating an apparatus to me, sat on the floor to arrange it, afterward raising himself to his feet, assisted only by a chair. It does not seem possible that a result such as this could be obtained. Fig 15 shows the man in street attire, he travels about Paris and frequently rides on the street cars. From a paralytic, absolutely helpless below the thorax, this man has been made an effective who cannot only take care of himself, but is able to assist others.



Fig. 17. Same patient, as an automobile mechanic. This same workman is under the machine and is able to get up alone, although he is paralyzed below the thorax.

CHAPTER XXX

THE CURABILITY OF HEPATIC CIRRHOSIS AND ASCITES

A man, aged 55, consulted me for a distended abdomen. He had been a chronic alcoholic for several years, and had begun to notice his abdomen was enlarging. He complained of digestive symptoms and there was slight jaundice. Urinalysis did not give evidence of nephritis and the heart was normal. The Wassermann reaction was negative. Upon examination, he presented a liver which was considerably enlarged, and the round edge of the organ could be felt on a level with the umbilicus. There was distention of the abdominal veins and he complained of hemorrhoids.

A diagnosis was made of chronic alcoholic hypertrophy of the liver, with ascites. He was ordered to bed and an absolute milk diet was prescribed, two and one-half quarts being given daily and alcohol in any form prohibited. He was given Vittel water with an ounce of lactose to the quart. This treatment was continued for two months and there was an improvement. Ascites gradually disappeared in the course of four months and the patient returned to his usual work in a store. He continued the milk regimen for six months, then cereals and a few vegetables were given. He has been in excellent condition for the past three years; the liver has returned to nearly its normal size and he has not complained of any symptoms.

This case represents the hypertrophic alcoholic cirrhosis described by Hanot and Gilbert and it must not

be confounded with the atrophic type of cirrhosis described by Laennec. In many ways the two types resemble each other, but it is a very important matter from a prognostic standpoint to distinguish between the two.

I will not attempt to give a minute description of hepatic cirrhosis, but will give a classification of three types which are of importance from a clinical standpoint. I will group the cases into cirrhosis due to heart disease, alcoholism and syphilis. The causes may be said to be (1) chronic hyperemia of a passive character, depending on heart disease or malaria; (2) chronic hyperemia of an active character due to alcoholism; (3) chronic active hyperemia depending on syphilis. There are other causes, but I shall not attempt to make a text book presentation of the subject. The English have spoken of "gin-drinker's liver" as the hypertrophic alcoholic cirrhosis. Some of the worst cases of "gin-drinker's liver," are seen in men who have been total abstainers all their lives.

The name cirrhosis given by Laennec to this disease comes from the Greek, *Keppoc* (russet colored) and refers to the color of the organ. It had been mentioned before his time, however, but had been mistaken for tubercle on account of the mammellated aspect it gave to the liver. Morgagni noticed the association of ascites with this condition of the liver. Baillie observed the more common occurrence of the disease in men "because they drink more than women," and called attention to its association with drunkenness and with the presence of ascites.

Trousseau observed that cirrhosis originated with chronic inflammation and noted that it was commonly secondary to a cardiac affection.

Syphilitic inflammation may occur in the liver just as it may occur in the kidneys or testicles and it should be suspected as a cause in every case. Syphilis will

cause perihepatitis, an affection of the capsule of Glisson, causing a miliary eruption resembling very small warts. However, the surface of the liver may be smooth, yet syphilitic.

It is not always easy to point out the exact type of cirrhosis we encounter because there are many intermediate forms. It is necessary, however, to determine the difference between the atrophic type (Laennec) and the hypertrophic type. It is possible also that alcohol may cause either type; from a therapeutic standpoint, the hypertrophic type is much more amenable to treatment than the atrophic. Sometimes there is hypertrophy in the first stage of atrophy of the liver, but it is not of long duration. The early symptoms of cirrhosis have been described by Hanot and Gilbert as follows: "Dyspeptic troubles, alteration of the color of the feces, physiological and chemical changes in the urine, the yellow tint of the skin, the appearance of varicose veins and of vascular nevi, hemorrhages from diverse tracts (especially epistaxis and gastrorrhagia), ascites, dilatation of the subcutaneous abdominal veins, hemorrhoids, splenomegaly, loss of strength and of flesh, belong to the hypertrophic as well as the atrophic forms of alcoholic cirrhosis."

It is difficult to state why alcohol causes atrophy in some cases and hypertrophy in others. The form known as Laennec's does not respond to treatment as well as the hypertrophic form. The hypertrophy may be in the hepatic cells or in the numerous capillary angiectases. The two conditions have the same cause, same symptoms, but the prognosis is different; the more cirrhosis points to the hypertrophic alcoholic form the more likely a cure will be effected.

For many years we have placed a death warrant on a man who had hepatic cirrhosis and today it is not rec-

ognized that hepatic cirrhosis with ascites is curable. *In some forms it is curable.*

In the clinic of Prof. Gilbert, in the Hôtel Dieu of Paris, in 1918, I saw several cases of hypertrophic alcoholic cirrhosis of the liver. He pointed out the first case as incurable, and then showed me another that was curable. I was quite surprised to find that there was some hope for this condition. Thanks to the French masters, especially Hanot, Gilbert and Dieulafoy, we have a simple classification, and a simple treatment that is effective. For several years French clinicians have held some hope in these conditions; Trosier, in 1886, communicated with the Société Médicale des Hopitaux, on the curability of chronic ascites. He reported the case of a man who was admitted to the hospital for ascites, edema of the lower limbs and collateral circulation. The quantity of fluid in the peritoneum was estimated to be about 12 pints and the liver and spleen were enlarged. He prescribed an absolute milk diet; in a few weeks the ascites disappeared, and, in time, the edema of the lower limbs.

It will often be necessary to tap the abdomen several times before a cure is effected. Dieulafoy reported a cure after five tapplings; Seailles reported one after eighteen tapplings. It may be necessary to resort to very frequent tapplings, but the strict treatment should be continued.

Ascites of cirrhosis can be cured; it is possible to cure cirrhosis of the liver, and the more it resembles the type described by Hanot and Gilbert as "alcoholic and hypertrophic cirrhosis" the more curable it is. In atrophic cirrhosis there is such a destruction of tissue that the disease is incurable; although regeneration of the liver substance, is, as a rule, easy, in the hypertrophic form it quickly regenerates. The new process

supplants the degeneration, and the liver, instead of becoming atrophied, may finally be much larger than normal. (Dieulafoy.) In most cases the liver does not return to normal size.

The treatment consists in total abstention from alcohol in any form and an absolute milk diet, two or three quarts a day, is given; rest in bed is essential. I have used this treatment for acute nephritis several years and am sure it has been a life-saving measure in many cases. Milk diet is very popular with French clinicians, but because it does not measure up to our caloric values we do not use it extensively. It acts favorably on the patient in many cases, and I have seen patients who have been on this absolute milk regimen for several months without untoward results; in fact it has been of decided benefit. Caloric values are important, but we should not overestimate their importance.

A patient with ascites, caused by hypertrophic alcoholic cirrhosis, should be in bed and alcohol in any form forbidden. A quart of Vittel water, with an ounce of lactose, should be taken each day, and it is well to administer diuretics in the form of diuretin or Trousseau's diuretic wine. Theobromin-sodium salicylate, commonly said to be the same as diuretin, does not seem to give as good results clinically. Trousseau's diuretic wine works well if made properly. Dieulafoy gives the formula as:

White wine	7 pints
Alcohol (90 per cent.)	17 ounces
Juniper berries	12 "
Acetate of potash	7 "
Digitalis leaves	2 "
Squill	1 "

It can be prescribed in tablespoonful doses every three hours for several days.

As is often the case, authors leave out the essential part of the formula, i. e., the method of preparation. If physicians would give their secrets in treatment as the

surgeon gives his technics, there would be less therapeutic nihilism. Too many prefer to keep their therapeutics dark.

As much depends upon the preparation of a remedy as upon its ingredients. I worked on the preparation of Trousseau's diuretic wine for four years and was disappointed in its use. When, however, I learned the correct method of preparation, I found it very valuable.

In the preparation of this remedy, first make an infusion of digitalis. Macerate the juniper berries in a mortar and add to the infusion. Allow to stand overnight and then press out the liquid through a tincture press. The squill is dissolved in alcohol and potassium acetate is dissolved in a sufficient amount of water; then the latter solution is added to the infusion, then the white wine, and last the alcohol with the squill, is added. The whole mixture is allowed to stand for seven days and the container is shaken each day, after which it is filtered and dispensed.

Milk becomes tiresome as a diet, but can be modified a little by adding a teaspoonful of coffee, one or two drops of vanilla, a spoonful of tea, or it can be aerated with a sparkler. Lime water may be added if it produces much gas. Koumiss may be prescribed.

Vittel water is easily obtained in America; it is beneficial by itself or can be used with lactose, which causes diuresis. No food must be given except milk. It is surprising how long a patient can continue on an absolute milk diet. My patient lived on it for six months without serious loss of weight and I have used it many times without great loss of weight or strength. I use it as a routine measure in the treatment of acute nephritis or chloro-Brightism; if patients know there is no alternative, they will accept this treatment willingly.

It is necessary to pay particular attention to the

bowels. If the patient is robust, it would be well to prescribe a saline laxative each morning in the form of Pluto, Seidlitz mixture or citrate of magnesia. If the patient is physically frail, tablets of phenolphthalein or the compound rhubarb pill (U. S. P.) will be of benefit and an occasional enema can be used.

It may be necessary to tap the abdomen. It may even be necessary to tap it several times, but the treatment should nevertheless be continued vigorously, as many cases of cure have been reported after many tapplings. Sometimes ascites will disappear spontaneously and not reappear.

If alcohol is resumed in any form, it is apt to cause recurrence of the symptoms and the result may prove fatal. A man who has been cured, or relieved, of hepatic cirrhosis should never return to the use of alcohol in any form as if he does ascites will reappear.

Cirrhosis due to cardiac disease should receive the same treatment. If there is edema of the lower extremities, diuretin should be used, but it is of little value if edema affects the upper extremities. The absolute milk diet is indispensable and this also applies to the syphilitic form.

In the latter type, potassium iodide should be added to the treatment, and arsenobenzol used intravenously will give good results. The milk regimen is necessary, and the treatment is essentially the same as in the other forms of cirrhosis.

In some cases opotherapy in the form of hepatic extract is of benefit; in others it is of no apparent value. The use of liver extract is comparatively new and should be well tried. The work of Gilbert, Carnot and Choay, in 1896, fixed, in a precise manner, the method of preparation of hepatic extract. There are many factors to be taken into consideration in opotherapy, especially the kind of animal the extract is taken from, and its age.

Hepatic extract is preferably taken from a pig; it may be given in bouillon, powder, aqueous extract; alcoholic extract or glycerin extract. Perhaps the easiest method of dispensing it is to use powder made into tablets. Experiments have shown that it has an excellent effect on hepatic insufficiency in some cases. Gilbert (Paris) reports two cases of improvement of grave hepatic cirrhosis with cerebral symptoms. Gilbert also notes the case of a woman who was in a desperate condition with a mistaken diagnosis of cancer of the liver; ascites, icterus, hemorrhage, and edema of the limbs disappeared rapidly when hepatic extract was used. He reports a case of atrophic cirrhosis with ascites in which the extract had a beneficial action. When there is evidence of hepatic insufficiency the extract often does well. It has a good effect on the symptomatic hemorrhages accompanying certain diseases of the liver, and its action is one of specific excitation of the elements of the liver.

CHAPTER XXXI

THERAPEUTICS

It is a very difficult matter to teach physicians that the aged require a medication different from that employed in treating younger persons. "In maturity Nature tends to cure while in senility Nature will kill." In other words, while there are many conditions in maturity that Nature will cure, in the aged we must be continually on our guard or the patient will die.

A man, aged sixty-two, had a pain in his heart. He had never been ill before and it was apparent that the condition was cardiac. A mistaken diagnosis of gastritis probably cost the old man his life for in one hour he was dead. Had he received a hypodermic injection of nitroglycerin the probabilities are he would be living to-day.

A woman, aged seventy, was taken ill with symptoms of acute gastritis. The pain was severe and her physician gave her a hypodermic injection of morphine. In fifteen minutes she was dead; undoubtedly the effect of morphine on the respiratory center caused her death.

These two cases illustrate the danger of dealing with old persons. From some condition apparently simple, they will die before you return to your office and it will humiliate you because perhaps you have given a favorable prognosis.

The diseases of senility require as much special attention as that given to diseases of children. In senility we must not only employ different remedies but must use them in dosages different from those used in maturity.

Again, it is not only the primary effects of the drugs we must observe, the elimination through the emunctories is so deficient that the secondary effects are fully as important as the primary.

For example, if we employ heroin to relieve pain, three days after administering it we observe drowsiness and other symptoms due to this remedy.

A close observation of the tongue can give us many clues. If this organ is red and the papillae prominent, it is an indication that we should prescribe *nux vomica* and hydrochloric acid, and if the papillae are very prominent, arsenic in some form is indicated. Give two minims if Fowler's solution or a tablet containing $\frac{1}{200}$ grain of arsenic trioxide, before each meal.

A red tongue indicates gastric irritability and hyperacidity. It is a peculiar fact that hydrochloric acid will often check this hyperacidity. Why acids check acids is difficult to explain, but probably when the glands of the stomach are producing an excess of acid, the ingestion of acid in the form of medication will supply the stomach with the normal amount and make glandular secretion unnecessary. Do not give hydrochloric acid after meals, however, or it will cause hypersecretion.

The opposite rule works out. If the tongue is coated, it indicates an alkaline condition of the stomach and an alkali is required. If there is a white fur on the tongue, give one drachm of milk of magnesia every hour for three hours, then stop three hours, after which a similar dose is given for three hours. If there is a very thick coating on the tongue, it is well to give either mercury in the form of gray powder, or podophyllin given in tablets containing $\frac{1}{40}$ grain, every three hours. Two teaspoonfuls of the compound solution of sodium phosphate may be given in place of the milk of magnesia. If the stools are dark, podophyllin is indicated, while if light or putty-like in consistency, calomel or gray powder is necessary.

Tic Douloureux

This painful condition will often yield to the use of the elixir of iron, quinine and strychnine phosphates, one teaspoonful given every three hours. Sometimes pyramidon in five-grain doses or butylchloral hydrate relieves it.

R

Butylchloralis Hydratis

Potassii Bromidi

āā3 ij

Glycerini

3 iij

Elixir Aromatici q. s. ad

5 iv

Misce et Sig.: Teaspoonful in one-half wineglass
of water every three hours.

I have obtained excellent results in this condition with diathermia treatment, given by a Telatherm machine. One electrode is applied over the painful area and the other on the opposite side. A treatment is given three times a week for one-half hour each time.

Senile Debility

This term is commonly used when we cannot make a diagnosis. Senile debility is usually termed "old age" and physicians are apt to say that a disease is due to "old age" and that nothing can be done for it.

This so-called senile debility is usually due to some form of toxemia, often intestinal or renal. As long as this toxemia exists it is useless to give any tonic, but when the toxins are eliminated we can then employ tonics with great benefit.

The elixir of iron, quinine and strychnine phosphates given before meals is a good remedy. Again, we can use the elixir calisaya or tincture gentian with $\frac{1}{60}$ grain tablets of strychnine sulphate every three hours or three times a day. We must remember, however, that the con-

tinued use of strychnine, is apt to hasten cardiac degeneration.

Amorphous phosphorus in gelatin coated tablets has been used by Nascher in the treatment of senile debility. One or two grains of amorphous phosphorus is prescribed three or four times a day.

I have used for some time diathermia treatments in senile debility. They are given by means of an autocondensation chair and through two poles of the Telatherm machine from 400 to 900 milliamperes are given for one-half hour. This seems to revive aged patients.

Use of Opiates

Morphine is a rather dangerous remedy for the aged and cases of sudden death have been reported from respiratory failure following a hypodermic injection. If morphine is necessary, it should be combined with atropine sulphate, $\frac{1}{100}$ grain. Atropine combined with morphine prevents this fatal action on the respiratory center.

In the aged we often obtain results diametrically opposed to those observed in younger individuals. For example, sometimes morphine will make the patient maniacal and he remains wide awake. Again, the secondary effect may come several hours after the primary effect and be more pronounced.

I use very little morphine in treating the aged. They are apt to beg for it, saying that they do not sleep at night. However, probabilities are that they doze in a chair during the day and when night comes cannot sleep.

There are very few conditions in the aged which cannot be relieved by heroin or codeine. Codeine works well with them and I have senile patients who have taken $\frac{1}{4}$ grain of codeine every night for years. It seems to be

a necessity for some of these patients and relieves them of pains that prevent them from sleeping.

For pain in the aged, whether due to gastrointestinal disorders or accidents, such as fractures and contusions, codeine will usually work satisfactorily and relieve them and there is very little danger of forming a habit or of the patient requiring a great increase in dosage. Codeine will not have the disagreeable effect which accompanies the use of the stronger opiates and usually does not give the unpleasant dreams often associated with morphine.

Heroin or diacetylmorphine will usually relieve pain, if it is not too severe. It can be used hypodermically in doses of $\frac{1}{24}$ grain and can be repeated frequently until the desired effects are obtained.

Heroin does not lock up the secretions and excretions as morphine does and it can be employed for several years. I have a cancerous patient who has taken $\frac{3}{4}$ grain of heroin every night for the past year. One fact which should be remembered is that opiates taken in order to relieve pain rarely form a habit, and it is only when they are employed for sleeplessness or trivial complaints that they are dangerous.

In peritonitis and other painful conditions I have used opiates in huge doses yet the moment the disease abated the patient no longer asked for, nor required, any further administration of the narcotic.

The Use of Coal Tar Derivatives

It is very dangerous to employ these derivatives in the aged as they are apt to cause depression in the respiratory center and cyanosis. They are seldom required and when it is absolutely necessary, pyramidon is the safest form to use. Pyramidon does not contain the dangerous HCN radical that is found in acetanilide, acetphenetidin

and antipyrin. In pneumonia and other conditions, where an antipyretic is required, quinine will usually answer.

Quinine is a very valuable remedy in the aged and if the kidneys are not affected, there is no albuminuria or hematuria, it may be used safely. In facial neuralgia and headaches, neuritis, pneumonia and especially senile debility, it is indicated. In senile debility sulphate given in doses of one grain every three or four hours is one of our best remedies. Quinine works well in most senile conditions and is an excellent stimulant. In extreme debility there is no better combination than quinine and strychnine.

Alteratives used in senile cases are usually undesirable because of the bad effect they have on the stomach. The iodides especially are harsh on this organ. There are very few conditions, however, that require the use of the iodides. Even in syphilis, arsenic usually works better in the aged than the iodides.

Arteriosclerosis is a normal process of advancing years and does not usually imply the use of the iodides except in cases due to syphilis.

For constipation special remedies are required because the weakened condition of the intestinal muscles causes lack of peristalsis and remedies usually employed in maturity do not work satisfactorily in the aged. Aloin is an excellent peristaltic stimulant as is also cascara and the bile salts. An increase in dosage becomes necessary in time.

The secondary effects of drugs are important in the aged. Belladonna when used with cathartics has a secondary effect which is noticeable several days after the drug is taken. The secondary effects of digitalis, strychnine and arsenic should be watched. We may get a secondary effect of aloes or aloin on the pelvic vessels. The secondary effects of iron on the intestines and the rôle

played by calcium hastening senile sclerotic changes, are extremely important.

In senile cases the rule in dosage is to decrease depressants and increase stimulants. We must always stimulate the aged when they are ill because Nature tends to kill them.

It is surprising sometimes to see, however, how small the dosage can be in treating the aged. Strychnine in $\frac{1}{120}$ grain doses sometimes acts better than larger doses. Occasionally, the smallest doses of calomel will cause diarrhea and salivation. In my experience, digitalis has been a very unsatisfactory remedy in senile patients and it is only in well-selected cases that it will be of benefit. Small doses of the fat-free tincture, say three or four minims per dose are usually sufficient, but the ordinary secondary effects should be watched. The old rule "children and the aged cannot stand large dosage" is in a measure true.

Hemorrhoids

Many times a careless observer will overlook the presence of malignant disease of the rectum. Again, hemorrhoids and cancer may appear together and only through careful examination will carcinoma be discovered. Hemorrhoids in old age may be caused by constipation, disease of the liver, and sedentary habits tend to produce this affection. The hemorrhage following a bowel movement is often not discovered and the loss of a small quantity of blood each day will in time cause anemia which may be mistaken for the pernicious type. I recollect a man of 60 who had every symptom of pernicious anemia and became so weak that he could not walk. It was finally discovered that he was daily losing blood. Under treatment for the hemorrhoids he improved and in two months his general health was much better. It is

often a difficult problem to check the hemorrhage, in old age, since it is dangerous to do it suddenly. Some cases of apoplexy and pulmonary hemorrhage have been reported following the sudden checking of a hemorrhoidal discharge. It is much better not to interfere too actively with these hemorrhages unless the patient becomes weak and exhausted from loss of blood.

The treatment consists in giving a laxative which contains sulphur, and produces a soft and nonirritating movement. The compound licorice powder, U. S. P. contains washed sulphur, one-fourth to one-half teaspoonful may be used in the morning and at night but this dose should not be exceeded since it is apt to cause griping pains in the intestines. Ten grains of washed sulphur mixed with a dram of confection of senna, may be used at bed-time. Besides its softening effect on the stools, sulphur is said to have a beneficial action in prolapse of the rectum and in piles. In fissure of the anus and stricture this treatment may be used.

Cold or astringent applications must be used in advanced life, but with great care; hamamelis sometimes works well and will not suddenly check the hemorrhage. Suppositories containing two grains of iodoform are useful in bleeding piles or a 2 per cent ointment may be used in a pile pipe, which can be inserted into the rectum. External hemorrhoids may be relieved by the following ointments:

℞	
Extracti Stramonii	
Extracti Hyoscyami	āā gr. xxx
Adipis Benzoinati	℥ i
℥. et ft. ung.	

℞	
Pulvis Opii	gr. xxiv
Acidi Gallici	gr. xij
Acidi Tannici	gr. xx
Petrolati	℥ i
℥. et ft. ung.	

℞	
Extracti Belladonnae	3 i
Phenolis	M ij
Petrolati	3 ij
℥. et ft. ung.	

The above formulas may be used when there is intense pain. For internal hemorrhoids a flaxseed enema will often be of benefit. Four tablespoonfuls of flaxseed are added to one quart of water and boiled for twenty minutes. It is then strained to the thickness of cream and used once a day, or an injection of olive oil or mineral oil may be substituted. Before using ointment it is sometimes advisable to use flaxseed enemata. Calomel ointment sometimes works well as an external application. It is advisable to operate on cases that are not relieved by ordinary methods of treatment when this condition is very troublesome.

Cystitis

Cystitis in the aged is often due, in the male, to retention, and, in the female, to pyelitis. I have sometimes used the following mixture to advantage in cystitis and pyelitis:

℞	
Pancreatini	3 ss
Potassii Carbonatis	3 ij
Fluidextracti Rhei	3 ij
Fluidextracti Hydrastis	3 iss
Tincturae Cinnamomi	3 ss
Spiritus Menthae Piperiate	3 ss
Syrupi Simplicis	q. s. ad 3 iv
Misce.	
Sig.: Take one teaspoonful in one-half wineglass of water every three hours.	

Fluid extract of pareira brava, five minims every three hours, and occasionally fluid extract pichi may work well. Copaiba and santal oil are beneficial in some instances.

If micturition is very frequent and painful, I use tincture of *cannabis indica*, one or two minims in a teaspoonful of elixir containing sodium bromide, to be taken every three hours.

CHAPTER XXXII

OPOTHERAPY

Organotherapy, or opotherapy, is not a new method of treating disease. It was known to the ancient Egyptians. Sushruta, who lived between 400 and 600 B. C., described the use of orchitic substance for the treatment of obesity, and this was probably the first mention of opotherapy.

It has always been the ambition of an old man to be made young and when his sexual powers show signs of waning, old age becomes an obsession, and he seeks means of restoring virility. Recently, Voronoff brought back into light the work of Brown-Séquard, who, in 1889, communicated to the Society of Biology of Paris, the wonderful results of the injection of testicular secretion, the experiments being made upon himself. Voronoff's writing in the lay press gave hope not only to old men, but to many young or middle-aged individuals, profoundly melancholic because they were losing their sexual power. Whenever a hope is expressed in some journal of rejuvenating man, the huge army of impotent men, seeks help from those who advocate the cure. Thus, when Brown-Séquard's "Elixir of Life" was discovered, factories which could produce glandular extracts were working day and night to supply the demand until August 16, 1889, when at Shamokin, Pa., ten deaths were reported after taking the treatment.

Brown-Séquard almost claimed his Elixir was a panacea; it was used for fevers, edema, ulcers, pains, locomotor ataxia, etc. We can readily imagine what the results

were. After these failures, organotherapy became almost forgotten,—temporarily.

The principle itself of organotherapy belongs to ancient medicine. It was the custom of many savage peoples to eat the organs of animals killed while hunting or of conquered foes in order to obtain the qualities these organs were supposed to possess. The heart of a lion was thought to give a man courage, and the brain of a snake, wisdom. Civilized people of the ancient world employed the organs and secretions of animals for therapeutic purposes.

The legend of the "Bezoar Stone," which was supposed to be found in "the inner part of a beast that is commonly called a goat of the mountaine," shows an early belief in organotherapy.

Celse advocated the blood of a goat, boiled with vinegar, for serpents' bites. Naturalists spread the idea of organotherapy among the Romans who drank the blood of dying gladiators to cure epilepsy. Homer tells of Chiron, the Centaur, who gave strength to Achilles by administering lion's marrow. Hippocrates used the bitter secretion of a bull's liver in suppositories, with honey, in cases of intestinal engorgement.

Owing to degenerative changes, some senile diseases are caused by absence or diminution of secretions of the internal organs, old age, therefore, furnishes many indications for the use of animal extracts. In normal old age, there is lessened secretion of the internal organs, but we should not endeavor to bring the old patient to a norm of maturity, because it is normal for old persons to have organs which are less active. In senility, where all organs are degenerated, a certain harmony exists between these weakened organs and as long as there is harmonious action between them, the old person continues to enjoy good health. No doubt certain internal secretions affect various organs, thyroid extract administered in

some cases of nephritis, will apparently improve kidney diseases; in this instance, hypothyroidism apparently caused nephritis. In some cases of insufficiency of the liver, the administration of hepatic extract seems to improve the condition.

When one organ degenerates more rapidly than another, there is broken harmony between these organs, but as this does not ordinarily happen before the sixtieth year, we do not notice the effects of ageing which this lack of functional relation brings on. The degeneration of an organ may be due to the excessive secretion of some other organ or to the lack of it. Our knowledge of the interrelated activities of various organs is still meagre, but, no doubt, the internal secretions of the ductless glands, besides the secretions of other organs which have ducts, play an important part in the process of ageing. Sometimes the lack of secretion of some organs will produce degeneration, while the excessive secretion or the administration of some glandular extracts may hasten degeneration. The internal secretions of some glands regulate others; thus the hormone, or internal secretion of the thyroid, may effect the adrenal secretion. There is an intimate relation between the testicles and ductless glands.

Undoubtedly, many conditions in old age affect the amount of secretion of glands. Mental conditions, as joy, sorrow, and genital disturbances will produce hypersecretion of the thyroid, while quiet, absolute rest, absence of genital irritation, milk diet, certain drugs, particularly lime and hypnotics, act as depressants.

It is difficult to know how many cases of senile nephritis, senile diabetes, senile dementia and many other diseases are due to deficient glandular secretions. Many skin diseases are probably due to deficient thyroid secretion. It is barely possible that some cases of cancer depend upon thyroid deficiency, since in some in-

stances the administration of thyroid extract in inoperable cancer, has caused the latter to entirely disappear. In the *British Medical Journal* of July, 1911, a case was reported where the larynx had been excised for malignant disease and a second operation had been undertaken for removal of the cancer, but it recurred. After a course of thyroid treatment, gr. 3, three times a day, at the end of three months the growth diminished; at the end of six months there was no evidence of tumor. Dr. Yates of North Bend, Nebraska, writes me that he has had several cases of cancer which disappeared as a result of thyroid medication.

I recently administered thyroid extract in a case of nephritis accompanied by asthma, edema and maniacal symptoms; a few days after the patient was much better. The combination of cystic thyroid and concurrent nephritis is frequent and thyroid medication will improve the latter condition, but when there is true nephritis due to cardiovascular, liver disease or infection, thyroid extract will not be of benefit.

At present, I am treating a woman of fifty who has had glomerulonephritis for several years. She was taken suddenly ill, had uremic symptoms, occipital headache, blurred vision, vomiting, numbness of the left arm and leg. Urinalysis showed albumin and many hyaline and granular casts. The systolic blood pressure was 230 and diastolic 110. The kidney disease had developed several years ago from eclampsia and as time went on she had considerable trouble with her heart, so that she had taken large doses of digitalis for a long time. The least exertion brought on dyspnea and she had been unable to go upstairs for a long time. I prescribed a milk diet and saline laxatives each morning and in a week she had improved. I then gave her thyroid tablets, each containing 2 grains of desiccated thyroids, one three times a day. She showed further improvement on thyroid

medication, was able to discontinue digitol, edema disappeared, blood pressure fell to 170 systolic and 100 diastolic and the urinary examination showed a diminution in the number of casts as well as a diminution of albumin. Her weight fell from 215 to 195 pounds and in every way she showed improvement.

There are many cases of nephritis that improve on thyroid medication and some cases of senile heart disease also seem to improve under this treatment. In obesity, rheumatism, gout, asthma, migraine, anorexia, pruritus senilis, eczema, and in constipation, thyroid extract is of value. Ten to twenty-five centigrams should be given from two to six times a day and if it is impossible to administer it by mouth, I employ an extract for subcutaneous injection, one ampoule being given every two days. It is well to begin with small doses of thyroid extract, perhaps one tablet a day until we are certain that there will be no ill effects, gradually increasing to the full dose. If too much is given, we may note an increase in the pulse rate, headache, restlessness, nausea, prostration and pains in the limbs and back. It is then well to reduce the dose or discontinue for a few days, later resuming its use.

Basedow's disease is rare in the aged and does not usually develop in women after the menopause. Myxedema may come in old age and in many cases is difficult to differentiate from senile nephritis with edema. There is general swelling all over the body, the lower lids are puffed, the voice is harsh and at times it is difficult for the patient to talk; the skin has a peculiar yellow color and the face becomes wrinkled. Asthma may be one of the symptoms and usually urinalysis reveals albuminuria and casts, a careless diagnosis would be one of nephritis. Under thyroid medication the condition improves in a few days, but it may leave evidence of renal insufficiency.

Thyroid extract causes an increase in oxidation in the body, the nitrogenous substances are excreted as urea, fats as carbon dioxide by the lungs; diuresis is produced, but as it is out of proportion to the amount of thyroid substance taken, it is probable that it is due to the effect on the nervous system and not to direct action on the tissues. Blood pressure is reduced, which may be due to weakness of the heart action. Results depend on the quality of the preparations, as absolutely fresh thyroid gland is not poisonous, but if an impure product is used, we may get untoward symptoms.

Renal Extract

I have observed excellent results, in many cases of senile nephritis, apparently due to the use of nephrin or renal extract. In 1892, Dieulafoy used glycerin extract of kidney for uremic coma. After glycerin extracts, the dry extracts were used; Renaut of Lyon gave his experiments of aqueous maceration, and Tessier, guided by Turbure of Bucharest, gave the treatment of nephritis by aseptic serum of the blood of the renal vein of a goat. In 1894, Tessier and Frankel reported cases showing the effect of injections of nephrin upon albuminuria. Chiprowitch of St. Petersburg, experimented on 35 cases of nephritis, employing the injections of nephrin and had excellent results in most cases. (*Gazette des Botkines*, 1895.)

Brown-Séquard and d'Arsonval found that among rabbits and guinea pigs having had both kidneys removed, those who received subcutaneous injections of diluted secretion of kidneys of animals of the same species, lived longer than those who had not received these injections. M. Dubois said: "There is in the kidneys a normal antitoxin which ceases to be secreted or is secreted in insufficient quantities when the functions of the

kidneys are perturbed, this antitoxin is not altered through its passage in the digestive channels; its rôle would consist of destroying as soon as their passage through the kidney, certain toxic principles of the blood resulting from the activity of the organism. I think this antitoxin principle exists in normal urines."

Several methods of application have been suggested for renal opotherapy. The following methods of Carnot are given:

1. Renal tissue—its secretion, its various extracts.
2. Serum of renal vein.
3. Antinephrotoxic serum prepared by means of injections of nephrotoxins.
4. The kidneys or serum of animals in renal regeneration.

Many methods of preparing renal substance have been used. Fresh kidneys have been macerated and administered in the form of powder. The pulp of fresh kidney is diluted in luke-warm bouillon and administered to the patient when his stomach is empty. Another method of preparation is the aqueous maceration, but the treatment cannot be continued very long because of accidents caused by putrefaction of organs during maceration, the product has a fetid odor. The simplest and most convenient method of preparation is the dessication of the kidney substance; the product thus obtained will keep a long time and can be administered in large doses. The aqueous extract is given after filtration and dessication, in the form of pills or capsules. Gilbert and Costaigne employ a peptic extract of kidneys as less toxic, but it retains the power of neutralizing uremic poisons and activates the secretion of the kidneys, whose epithelium is altered. The glycerin extract is seldom used at present.

In cases of senile nephritis where there is renal insufficiency, uremic symptoms, or acute exacerbations of a

chronic process, I gave 25 centigrams of renal extract in pills or cachets from four to eight a day. If the patient cannot take the preparation by mouth, I use the hypodermic preparation, which is isotonic and nonglycerinated, each c. c. corresponding to ten centigrams of renal extract. If the case is acute, I give an injection each day for a week and then every two or three days. In many cases it will improve the comatose condition and I have seen one case of anuria that was relieved by this method of treatment.

I have several aged patients who have been taking pills of renal extract for a long time with apparent good results. A woman, aged sixty, had nephritis for several years. Urinalysis showed albumin and the microscope revealed many hyaline and granular casts, as well as blood. She has taken renal extract for four years and at present urinalysis does not show abnormality and she seems in perfect health. Another woman, aged 76, has taken renal extract for three years and has good health. Recently, I experimented, discontinuing the use of this preparation only to find that in a week's time, she showed signs of nephritis with edema, which disappeared when she resumed renal extract.

I was once called to see an invalid, a woman of 55, who had been ill for several years. She had been under treatment in various hospitals and had taken a long course of thyroid medication; as a result, she had lost a great deal of weight,—when I saw her she weighed about 90 pounds,—her face was wrinkled, giving her the appearance of a woman twenty years older. She complained that she could not get out of bed without fainting and had not been able to walk for two years. Urinalysis showed hyaline and granular casts, there was an accentuated aortic second sound which showed that the heart was overworking. She was in a weakened state and it seemed advisable not to give any medication, such as

laxatives, as her stomach would not be able to stand them. I tried renal extract in pills, giving three a day, and used no other remedy; she continued its use for some time and her daughter wrote to me that her mother had greatly improved, that she was walking and had been to the theater. She gained in strength, but not in weight. A few months afterward she traveled several hundred miles. She spent the winter in Florida and upon her return to New York was taken ill with an acute exacerbation of nephritis, but a milk diet soon relieved the attack. She lived three years in good health, but finally died from uremia. In this case, the treatment was limited to the administration of renal extract, no change in diet was made.

I have used renal extract in several cases of albuminuria and have seen albumin disappear without any change in diet. Renal extract can be continued several years. I have a patient who has been taking three tablets a day for eight years and has maintained a norm of senility, after having suffered from interstitial nephritis for several years. In some cases which seemed hopeless, I have seen this extract apparently cause improvement. The simplicity of its administration (the dose does not have to be increased and there seldom is gastric intolerance) makes it a valuable therapeutic agent in senile nephritis.

There are other causes of nephritis in old age, the disease may be of hepatic origin or possibly due to insufficient thyroid secretions. In 1888, Hanot showed hepatic lesions in the course of nephritis. C. Bernard and Laederich showed that the functional troubles of the kidneys are accompanied by alteration of the liver and that the latter organ plays an important part in the pathogenesis of uremia. Hepatic extracts possess certain diuretic properties and can be used in some affections of the kidneys with good results.

Lorand concludes that extirpation of the thyroid gland gives a true interstitial nephritis. Myxedema is often accompanied by albuminuria, which rapidly improves under thyroid medication. Thyroid extract helps renal hypertension and the insufficiency of urinary depuration.

The secretion of the suprarenal glands helps in low arterial pressure and acts as a diuretic. The internal secretion of the pituitary body acts as a diuretic and cardiostenic and apparently is beneficial in acute infectious nephritis. Ovarian extract and extract of corpus luteum sometimes help the kidney condition so often observed during the menopause. At this time many women develop nephritis with high blood pressure and symptoms of uremia. In others, the menopause will aggravate chronic nephritis. In these cases of renal insufficiency ovarian extract will be of apparent value.

From the above, it will be understood that other internal secretions affect the kidneys and it is often well to combine those extracts which have a common action; thus, we can combine the renal and thyroid, renal and hepatic extracts.

Renal opotherapy is indicated in subacute nephritis, or where we wish to cause diuresis, elimination of chlorides, disappearance of edema and albumin. In some cases of chronic interstitial nephritis it is contraindicated, renal impermeability exposing the patient to toxic accidents.

Jacques Delor (Theses de Paris, 1911) called attention to the fact that the kidney of a pig is often tuberculous so that it would be possible to provoke tuberculosis of alimentary origin. Great care must be exercised in the selection of the animals used.

The dry extract is the best for internal use, but if rapid action is necessary hypodermic preparations should be used.

Hepatic Extract

In my chapter on cirrhosis of the liver, I have spoken of the use of hepatic extract in some forms of cirrhosis. The works of Gilbert, Carnot and Choay, since 1896, have established a definite method of preparation and administration, of diagnosis (opodiagnosis), and of treatment (opotherapy). Several methods of preparation have been employed for aqueous, alcoholic, glycerinated, pepsic, saline and alkaline extracts and those prepared by the method of Baumann. Gilbert has obtained good results from the use of hepatic extract in many grave diseases of the liver, such as icterus gravis, hypertrophic alcoholic cirrhosis and hepatitis. Hepatic opotherapy is very useful in cases of functional insufficiency of the liver; it lessens indicanuria, the quantity of urea increases, urobilinuria often disappears and in other cases glycosuria disappears.

At present, I am treating three cases of diabetes mellitus by this method, giving four pills a day, each containing 25 centigrams of hepatic extract; in each case, sugar has markedly diminished. In some cases of diabetes it seems to check such symptoms as pruritus vulvae, eczema and rheumatism. There are a number of cases of diabetes mellitus which are of hepatic origin and it is only in such cases that hepatic extract is of value. It is not always possible to select the cases, but opodiagnosis,—that is to administer an extract for purposes of diagnosis,—may be resorted to. It will assist in establishing a diagnosis of hyperfunction or hypofunction of the liver. In the former, hepatic extract will increase the amount of sugar and should not be continued.

Hepatic extract is of value in certain hemorrhages, epistaxis and hemoptysis, but particularly in those hemorrhages which are of hepatic origin. In some cases of hemoptysis of tuberculosis, it will be of benefit.

Hepatic extract is said to be of value in some cases of biliary lithiasis, nephritis, gout, dermatoses, and albuminuria. I give 25 centigrams of the extract four or eight times a day. It is administered in the form of pills and cachets, also, in hypodermic preparations, which are isotonic solutions and nonglycerinated. One ampoule is injected every other day until the condition improves, then it is used once or twice a week.

Suprarenal Extract

Addison first demonstrated the action of the internal secretion of the suprarenal glands on metabolism and later Brown-Séquard did research work along these lines. In asthma of old age, hypodermic injections of suprarenal extract will relieve the attack and may be repeated until it is over. In Addison's disease, cardiovascular asthenia, postoperative accidents, hemorrhages, suprarenal extract may be of benefit. It can be administered in pills or capsules, in doses of 10 centigrams, four to eight pills being given daily. Since the administration of suprarenal extract is apt to produce albuminuria and glycosuria, it is advisable to examine the urine frequently.

Pituitary Extract

There are some conditions in old age which are relieved by the use of this extract. In some cases of myocarditis, influenza, pneumonia, hypotension, acromegaly, insomnia, it may be of use. Usually, the extract of the entire gland is used in pills, or cachets in doses of 10 centigrams, two to four doses being given a day. If the extract of the posterior lobe is used, five centigrams are given two or four times a day. In some cases of obesity it may be used, as well as in various hemor-

rhages. If used subcutaneously, one c. c., which corresponds to one-half of the posterior lobe of the hypophysis of an ox, is given every two days. In many cases it can be used with thyroid extract with good results. When thyroid medication fails to relieve the patient, the combination with pituitary extract seems to fortify its action.

Prostatic Extract

It is reported that after prostatectomy in dogs the testicles lose their functional activity, ejaculation ceases and the formation of spermatozoa is stopped. If glycerin extract of the prostate is administered, these changes are said not to occur.

A patient, aged seventy, consulted me for difficulty in urination, especially at night. He was obliged to get up several times and micturition was difficult and painful. Finally, I was forced to catheterize him.

Upon examination, the prostate was found to be considerably enlarged and urinalysis revealed chronic interstitial nephritis. I gave him a saline laxative daily, advised a diet of milk and cereals for a few days, and prescribed pills of prostatic extract, each pill containing ten centigrams of the substance of the prostate gland, one pill being given every three hours. He was relieved on the second day and catheterization became unnecessary. In the course of a week he had nearly returned to a state of normal senility. He continued the use of the prostatic extract and his condition continued to improve.

I have employed the extract of prostate in several cases with equal benefit. It is claimed by some to relieve the neurasthenia which often accompanies this condition. It may also be used in combination with other methods of treatment. If necessary, we can employ a hypodermic

preparation of prostate extract, which will act more rapidly.

Extract of Bile

This preparation is a valuable aid to digestion and to proper intestinal action, facilitating the absorption of fats and counteracting flatus and constipation. It is of value in mucous colitis and intestinal putrefaction. Some cases of acid dyspepsia have been relieved by ox bile; pig bile is said to contain more equally balanced proportions of the salts of sodium and potassium and to more closely resemble human bile. Some cases of biliary lithiasis and catarrhal jaundice have been reported improved after the use of this extract. The pills of extract of bile containing ten centigrams should be given from four to eight a day.

Gastric Extract

This extract is taken from the mucous membrane of the stomach of a pig and contains not only pepsin, but all of the substances of the stomach glands. It is indicated, according to Gilbert, in the following cases:

1. Hypopepsia with hyperchlorhydria.
2. Hypopepsia with normal chlorhydria.
3. Hypopepsia with hypochlorhydria.

It is of benefit in some cases of anorexia, alcoholic gastritis and the digestive disturbances accompanying tuberculosis. The preparation is given in pills or cachets in doses of 25 to 50 centigrams, four to eight being given a day.

Extract of Myocardium

This extract is of value in some cases of senile myo-

carditis and asystole. I have used it in one case of myocarditis which accompanied senile nephritis and it gave good results. Twenty-five centigrams of the extract are given in pills or cachets, four to eight being taken daily. It is claimed that the myocardium is rich in adrenalin, which might account for its action.

Pancreatic Extract

In some cases of pancreatitis, pancreatic extract is of value, as in diabetes mellitus of pancreatic origin. It also is useful in some gastrointestinal disorders.

Other extracts sometimes employed are extract of bone medulla, brain substance, parathyroid, thymus, pancreatic-intestinal.

There is an intimate association between bone marrow and part of bone medulla in the formation of red corpuscles. In some cases of pernicious anemia and lymphadenoma, the extract of bone medulla is said to be of value. The extract of brain substance seems to be of no value.

When a manufacturer places an order for a certain amount of fresh glands, in many instances the glands are left in a container a day or two until the order is filled. As a result some of the glands undergo decomposition, which is decidedly detrimental to the making of a good product. It is not sufficient for a manufacturer to give a doctor a statement of the doses and indications for the use of glandular extracts; we should know in detail the method of manufacture; the kind of animals used, their ages, etc., in order to judge whether the product is made under proper conditions. Most glandular extracts have a bad odor and while it is argued that all animal substances have odors, yet I believe that an extract made under proper conditions should be odorless. If the glands are at all decomposed, there is an odor,

and the product is not fit for subcutaneous injections, nor is it the best to give by mouth.

The administration of animal extracts is more advisable by mouth as the rigorous aseptic precautions, indispensable in dealing with the subcutaneous injections are not necessary. Injections are necessary in many cases where great rapidity of action is essential.

In France, Gilbert, Carnot and Choay have done a great deal for the pharmacologic study of opotherapy. In one of his lectures in the clinics of the Hôtel Dieu, Paris, Gilbert said: "About seventeen years ago, with Carnot, then my intern, I made use for the first time of hepatic opotherapy in the treatment of tuberculous hemoptysis, the medical opotherapeutic matter did not exist then. We had to administer the pulp of the fresh liver or the bouillon of liver. But soon, with the aid of Choay, we showed the series of forms (powder extracts) under which animal, as well as vegetable matter, could be used therapeutically."

Aqueous, alcoholic, alkaline, saline, glycerinated, pepsic, tryptic and papain extracts of various organs were prepared, as well as globulins, nucleo-albumins, etc. Experiments were performed with these, but Gilbert and Carnot preferred total extracts obtained by treating the organs with various solvents, preparations which only differ from the organs by a mere elimination of water and have been named total extracts. These total extracts are used in all preparations and represent the pulps of the organs merely deprived of water, and the manipulations in manufacture are reduced to a minimum. The fresh glands are gathered, rid of their surrounding tissues, immediately scraped and rapidly desiccated in such a way that there are no diastatic destructions and no alteration of the glandular secretions. It may be done in air or in vacuum. Choay notes that autoclaves in which the pulps are spread, in thin layers, on plates,

have poor ventilation; most often the air is nonfiltered, carries in the germs with which it is soiled; the temperature is ill-regulated, rises too high in some regions, and destroys diastasis, finally, the extract has a gelatinous aspect. The method he advocates consists in using an apparatus of concentration in vacuum, causing rapid evaporation under low temperatures.

Important factors are the kind and age of the animal, its nutritive condition, sometimes a young animal, the organs of the fetus are used, or animals on a milk diet or in inanition. In order that an extract should have the maximum of active principles, certain conditions are to be observed; the pancreas must be taken during the first hours of digestion and the liver a little later. Sometimes it is necessary to have the animal exercise in order to increase glandular activity and in some instances the glycogenic function of the liver can be increased by injecting glucose, it then yields better results in morbid glycosuria (Gilbert). Gilbert notes that the methods of sterilization by heat are long, and uses hydrochloric acid to acidify, later neutralizing it by adding sodium carbonate, which leaves harmless sodium chloride.

Every care must be given to minute details if we expect satisfactory results; hoping to build up opotherapy, we must use products that are prepared by pharmacologists who have had long experience in this work.

Doctors sometimes purchase extracts which perhaps do not have the maximum of glandular activity, or perhaps have been altered by heat or bacteria and therapeutic results fail to follow their use. This would tend to discredit opotherapy.

Much can be done in old age through opotherapy, but unfortunately there is great difficulty in determining the functional activity of the various organs and we must depend in most cases upon clinical experience and opodiag-

nosis. Opotherapy in geriatrics is one of our most valuable weapons in combating disease conditions and preventing many senile degenerations.

EXTRACT	INDICATIONS	DOSES
Bile	Catarrhal jaundice; gall stones; intestinal putrefaction; constipation	2-grain tablets, three or four times a day.
Blood	Anemia; tuberculosis	3 grain tablets, 4-8 a day.
Brain Substance	Neurasthenia; functional nervous diseases; senile dementia	2 grain tablets, 4-8 a day.
Duodenal Substance	Intestinal indigestion; constipation; acute and chronic enteritis.	2 grain tablets, 4-8 a day.
Gastric Substance	Hypochlorhydria; hyperchlorhydria; Atonic conditions, anorexia.	5 grain tablets, one after meals.
Kidney	Renal insufficiency; uremia; nephritis.	2 grain tablets, 4-12 a day.
Liver Substance	Cirrhosis; diabetes of hepatic origin; albuminuria; dermatoses; gout; epistaxis; hemoptysis.	3 grain tablets, 4-8 a day.
Lung Substance	Abscess of lung; empyema; suppurative hydatid cysts; tuberculosis.	3 grain tablets, 4-8 a day.
Mammary Substance	Metrorrhagia from uterine fibroids.	3 grain tablets, 2-8 a day.
Myocardium	Asthenia; myocarditis	3 grain tablets, 2-8 a day.
Orchitic Substance	Impotence; neurasthenia	2 grain tablets, 2-8 a day.
Ovarian	Circulatory troubles; nervous and visceral troubles following removal of ovaries or at menopause; arthritis; gout in women; chronic rheumatism; nephritis at menopause. Often combined with thyroid extract and pituitary extract for nephritis and many other conditions which begin at the menopause.	2 grain tablets, 2-8 a day.
Pancreatic extract	Pancreatitis; cancer of pancreas; intestinal indigestion; diarrhea, gastroenteritis; diabetes associated with hyperactivity of liver; tuberculosis.	3 grains tablets, 4-8 a day.

EXTRACT	INDICATIONS	DOSES
Parathyroid	Paralysis agitans; nephritis.	tablets, $\frac{1}{50}$ – $\frac{1}{10}$ gr. 2–4 times a day.
Pineal Gland	Premature decay of mental powers; stimulant to mental processes.	tablets, $\frac{1}{10}$ grain, 3 times a day.
Pituitary (Total Extract)	Diabetes insipidus; affections of myocardium; hypotension; convalescence from infectious diseases; acromegaly; Basedow's disease; insomnia; nephritis at menopause.	$\frac{1}{2}$ grain tablet, 3 times a day.
anterior lobe	In cases associated with high blood pressure, where there is pituitary insufficiency.	1 grain tablet 3 times a day.
Posterior lobe	Hypotension Many cases require a combination of total extract of pituitary with thyroid and ovarian extracts.	$\frac{1}{10}$ gr. tablet 3 times a day.
Prostate Substance	Prostatic hypertrophy.	2 grain tablets, 4–8 a day.
Spleen Substance	Anemia; hemorrhages, tuberculosis	2 gr. tablets 3 times a day.
Supra-Renal	Suprarenal insufficiency; Addison's disease; cardiovascular asthenia; postoperative accidents; asthma	3 grain tablets, 2–4 a day. Subcutaneous injections, also.
Thyroid	Hypertension; myxedema; obesity; gout; rheumatism; asthma; migraine; constipation; anorexia; dermatoses; pruritus; eczema; psychoses; retarded union of fractures; Metrorrhagia. Combined with pituitary, ovarian, and renal extract in cases of nephritis, associated with hypertension, which develops at menopause.	$\frac{1}{10}$ –2 grains, 2–6 a day.

CHAPTER XXXIII

ELECTROTHERAPY IN THE AGED

The high frequency current derives its name from its extremely rapid oscillations (about one million per minute) and can be applied to the patient without any discomfort. The oscillations are produced by a Leyden jar or some other condenser which causes a series of sparks to pass between the terminals of the spark gap. The Leyden jar was discovered by Musschenbrock in 1775.

Through the outer coatings of the jars the current passes to an Oudin resonator or Tesla coil which causes an increase in voltage from hundreds of thousands to millions. It is possible to pass the current from the Oudin resonator or Tesla coil to the patient. Local or general treatments can be given, modern apparatus enabling us to give many different kinds of treatments. For practical purposes, general treatments are used in the form of autoconduction or autocondensation, and locally, vacuum electrodes are used over the surface of the affected parts, or diathermia, using flexible tin over the affected parts, each piece being attached to a pole of the d'Arsonval current.

Autocondensation is very effective in many diseases of old age and as no sensation except warmth is felt, it is an agreeable form of treatment. The electric chair is connected to one pole of the d'Arsonval current while the other is attached to a handle which the patient holds; a couch or cushion can also be used and is perhaps more convenient than the chair as it enables one to give more milliamperes, the treatment usually lasts half an hour, repeated every other day and in some cases twice a

week, giving as much electricity as the patient can take without having an aching sensation in the wrists; sometimes, wrapping lead foil around each arm above the



Fig. 18. Autocondensation treatment.

elbow, makes it possible to give more milliamperes without distressing the patient. We can by this treatment produce profuse perspiration, which has a beneficial effect; it is difficult to produce perspiration in old patients, yet those who have not perspired for several years will

probably have a moist skin after a half-hour's treatment by autocondensation. The couch or cushion makes it possible to give a patient 1500 milliamperes, one pole being connected to the cushion and the other attached to a handle which the patient holds with both hands.

Autocondensation is one of the best methods of lowering blood pressure. I have seen it cause the pressure, both systolic and diastolic, fall ten points after one treatment. I have been treating a woman of seventy-six by autocondensation for three years; when she first consulted me, the systolic pressure was 220, but, after several treatments, it became lower and now is 135. Since the pressure has been lowered her general health has greatly improved. I have several old patients who take these treatments regularly and in most every instance it has lowered blood pressure; with this diminution of pressure, there is improvement in the general health and through increased perspiration, toxins are freely eliminated, and the waste products in the urine are increased. It has a beneficial action on the nervous system, many patients claim that they rest better after a treatment. It is said that autocondensation will lower blood pressure about ten points in ten minutes, and, although the pressure may not remain low, it has a more permanent effect than any other treatment. The following cases illustrate the use of autocondensation:

CASE I.—A woman, aged sixty, weight 120, had interstitial nephritis and suffered from severe headaches, pressure in the back of the neck and many nervous symptoms. Her blood pressure was 190 systolic and 100 diastolic. I gave her a half-hour's treatment in the electric chair, applying 750 milliamperes, and repeated this treatment each day for two months. Each treatment produced free perspiration and in a few days the symptoms due to nephritis disappeared; blood pressure fell to 150 systolic and 70 diastolic and remained at this

point for several months after the treatments were discontinued.

CASE II.—A woman, aged fifty-eight, weight 200, had diabetes mellitus. She was suffering from asthenia and had rheumatism in the left knee and left arm, which caused great discomfort. After a few treatments by autocondensation, giving about 800 milliamperes for one-half hour and then applying a surface electrode over the knee and arm, her condition was greatly improved and she felt able to travel.

CASE III.—A man, aged seventy-six, weight 180, had glomerulonephritis, suffered from headaches, dizziness and rheumatism. Urinalysis showed no albumin, but many hyaline and granular casts; his systolic blood pressure was 220 and diastolic 140. A few treatments by the autocondensation couch, using about 800 milliamperes for one-half hour, caused the pressure to fall to 180 systolic and 100 diastolic, and in the meantime his general health improved. After the treatment his body was covered with perspiration and he informed me that it was the first time he had perspired in many years. The pressure continued at the last mark for several weeks after treatments were discontinued and he maintained it at the same point by taking six treatments every three months.

CASE IV.—A woman, aged seventy-five, who had senile nephritis, was suffering from nervousness and many indefinite pains in the extremities. Her systolic blood pressure was 210 and diastolic 140; she has taken the treatment three times a week for a long time, 500 milliamperes being given by autocondensation. Under this treatment her systolic blood pressure has fallen to 140 and diastolic to 75.

In nearly every case, general health has improved and blood pressure has been lowered. In comparing twenty-

five patients whose blood pressure I have taken, I note that ten who have been under treatment have a much lower pressure and are in much better general condition than the fifteen who have not taken the treatment. Many cases of senile nephritis in which the physician has used every medication without avail, the kidneys and intestines having been overworked for a long time, will possibly be improved by autocondensation, since it will eliminate toxins through the skin, thereby relieving the internal organs. Autocondensation causes a relaxation and dilatation of the capillaries, this in turn causing increased circulation, increased oxidation, increased elimination, increased general metabolism, and improving nutrition.

The apparatus used for autocondensation may be of low amperage and high voltage, or high amperage and low voltage. In the former, it is necessary to have a pad three or four inches thick and 300 to 400 milliamperes are sufficient. In the other type of apparatus, with high amperage, it is possible to have a thin cushion and from 500-1500 milliamperes should be used. When beginning the treatment, it is well to start with 1000 milliamperes, which causes a sensation of warmth to go over the body; in a few moments the wrists begin to ache and it is well to reduce the number of milliamperes to 500 or 600. By wrapping lead foil above the elbows on each arm, we may eliminate this aching at the wrists. When the patient is seated in a chair, it is well to place a pillow in his lap for the metallic handle to rest on, as it might cause a disagreeable sparking on the skin; moreover, the patient should be warned not to remove the hands from the handle as they might spark. A glass of cold water taken during the treatment will assist in starting perspiration and a cold cloth on the forehead will give comfort. It is not necessary to remove the clothing and there is no danger of a patient's "catching cold" on leaving the of-

fice while perspiring, even in the winter months. In summer, when it is very hot, I sometimes have an electric fan near the patient, which reduces his discomfort. After the treatment, temperature by mouth may be increased one degree. A treatment should be given for a half hour or even one hour, three times a week; at first, it is well to give one every day for a week or two. I have treated a patient whose blood pressure was 90 systolic by giving 250 milliamperes; this improved general health, relieved nervousness and insomnia and yet did not have any effect on blood pressure; in these cases, where autocondensation is given in order to improve nutrition, and where it is not advisable to lower blood pressure, the desired effect can be obtained by giving a low milliamperage. With the hot wire meter it is possible to regulate the dosage of electricity so that each time a patient comes for a treatment it is only necessary to give the same amount of current as indicated on the milliamperemeter.

Some cases in which both general treatment and local application are desired, as in a case of neuritis, associated with high blood pressure, it is well to give a general treatment for a half hour and then apply a surface electrode from the Oudin resonator for ten minutes. In other cases, vibration on the affected parts will work well, but I have not seen many cases which were relieved by the latter method.

In paralysis following apoplexy or due to uremia, in which the patient improves sufficiently to walk around, but retains a partial paralysis of an extremity, autocondensation combined with local applications will often improve the general condition and sometimes cure paralysis.

For long treatments it is necessary to have an apparatus in which the spark gap is cooled; some manufacturers have placed an electric fan under the De Kraft gap;

another ingenious method is to attach a pump to the gap which forces the air through constantly during the treatment. This pump also works as a spraying apparatus and vibrator, thus serving different purposes.

Much depends upon the temperature of the surrounding air and the increase in perspiration varies in individuals; again, it is not always the same with the same person under different circumstances. On a warm day, it is, of course, easier to induce perspiration, some days a patient will perspire freely and on other days, with the same milliamperage, there will be no moisture on the skin. The blood is caused to rush to the surface of the body and as a result venous congestion of the internal organs is relieved, the intestines, liver and other organs receiving a new supply of blood. Once or twice I have observed that a patient felt faint while taking the treatment, but this faintness was quickly relieved by bending the body forward, compressing the abdominal organs. Possibly it was caused by a circulatory disturbance due to the treatment, but I am inclined to think that the patient was not feeling well before taking it.

As the internal organs receive a new blood supply, they functionate better; congestion of the liver is relieved, which is very important. The removal of stagnant blood from the internal organs causes a great deal of waste matter to be eliminated through the skin, which relieves the kidneys of the extra work. It is necessary to watch the action of the skin as failure to perspire might cause harm.

Autocondensation is advantageous in cases of nephritis, associated with high blood pressure, rheumatism and gouty conditions. It is important to give attention to the general health; frequent urinalysis should be made; attention directed to the intestines, and the diet should be carefully regulated. It is well to give laxatives and tonics. A good combination, for patients who

are weak and anemic, is hypodermic injections of iron and arsenic after each treatment.

Autocondensation is useful in some cases of persistent headache. In some cases of senile asthma and emphysema it will have a beneficial action, especially if the heart is overworked.

When the chair is connected with the apparatus, the patient is seated on a thin dielectric, one pole of the d'Arsonval is connected to the chair and the other pole connected by a bifurcated split connector to the foot-piece and metallic handle, which the patient holds with both hands. If a cushion is used, one pole of the d'Arsonval is connected to the cushion and the other to the handle, which the patient holds.

The local application of the high frequency current is a valuable form of treatment in many diseases of old age. There are many ways of employing it; perhaps the most commonly used is that of the vacuum electrode connected to the Oudin or Tesla currents. The tube is in direct contact with the skin or can be used through the clothing; in the latter instance, there is additional sparking since the clothing breaks the contact with the skin, which causes counter-irritation of the parts treated. There are vacuum electrodes for the various parts, as rectal, prostatic, urethral, throat, nose and ear, tongue and comb electrode for the head. The latter is used for occipital neuralgia and is often effective. When using vacuum electrodes for the vagina, rectum and urethra it is necessary to lubricate the electrode with lubricating jellies. Since it becomes hot in a short time there is danger of removing a piece of mucous membrane, therefore, the treatment should not last over six or seven minutes. Longer treatments are sometimes more effective and I then connect the metallic handle with the Oudin resonator, allowing the current to go into the body through the hands and with a vaginal, urethral or rectal electrode in

the hand, make application to the part to be treated; in this way I apply the high frequency current for 15 minutes or longer without any heating of the electrode. No handle is used on the electrode for this application as the physician's hand on the electrode is all that is necessary to produce an effluve. It is dangerous to use an urethral glass electrode as cases have been known where the electrode broke in the urethra because of an erection during the treatment. Unbreakable vacuum electrodes are now made, however.

When a large area is to be treated this can be done by the method described above, the patient holding a handle and the physician attracting a spark from the body by means of a vacuum electrode held in his hand. In cases of neuritis this form of treatment is often effective.

Surface treatments are of benefit in cases of neuritis and neuralgia, lumbago, sciatica, skin diseases, headaches, insomnia, neurasthenia and many of the paralyses of old age. A man of 75 had apoplexy and as a result, paralysis of the muscles of deglutition; there was no other paralysis and it seemed that if he could swallow he would have completely recovered from the attack. I treated him each day at the bed-side, with a portable high frequency apparatus, applying a surface electrode over the throat and in a few days he was able to take nourishment. Possibly in this case Nature would have cured him, but I have seen several cases of paralysis in old age following apoplexy or uremia in which I am certain the high frequency current was of great benefit. A small portable coil can be taken to the bedside and attached to any electric light socket. The effluve is applied over the affected parts for ten or fifteen minutes daily or every other day; *it is well not to use a strong application as it may overstimulate the muscles.* In cases of neurasthenia the effluve is applied to the spine for fifteen minutes.

Senile Debility

One of the most common conditions we are called upon to treat is senile debility. This condition is rather vague; there are cases in which no organic disease can be found in the background, but there is a general degeneration of all the organs. Most often, however, it is due to some organic affection like nephritis or diabetes and treatment must be directed to the underlying cause. Many of these cases improve under general and local treatment and if the blood pressure is high, autocondensation (500–1000 milliamperes) for one-half hour three times a week, supplemented by effluve over the spine for ten minutes, should be used. If blood pressure is normal, from 200–300 milliamperes should be used with autocondensation. This treatment improves nutrition. Sometimes general vibration, with a regulated apparatus which gives gentle vibration, will be of benefit, and should be given for five or ten minutes all over the body.

Neuritis

Neuritis often resists all forms of treatment and a guarded prognosis should be given. If the case has been of long standing, treatment must be continued a long time. Effluve should be used for 10 or 15 minutes, three times a week, and attention should be given to the general health. I have seen some patients relieved after six treatments, while others are only cured after nine or ten months of treatment. Oftentimes, improvement will come after treatment is discontinued and I usually inform patients that they may get the results of treatment several weeks after the applications have been stopped. A man, aged sixty-five, had neuritis of the left arm; I could not discover any disease in the background. I applied effluve on the arm for fifteen minutes three

times a week seventeen times without results. I told him to rest from the treatments for a short time, and a week after he had ceased to take them, the neuritis began to improve; he had not required further treatment. This was five years ago and he is now in perfect health, never had a recurrence of the attack. There are many cases of this kind in which results followed several weeks after treatment; sometimes electricity seems to have a tardy action like that of radium, whose work may be conspicuous several weeks after its application.

A woman, aged sixty, had neuritis in both arms for two years; she suffered a great deal, was not able to dress herself since she could not get her hands back or to her head. She had massage, vibration and many other treatments without benefit; I advised effluve three times a week, but warned her that she might not derive any benefit from it. She continued the treatments for seven months; at times she was better; at times she suffered intensely. A month after she stopped treatment, the condition improved and she has continued to gain.

The current should be strong and applied directly to the skin. In many cases diathermia is of great benefit; electrodes two inches square, on the opposite sides of the affected parts, should be moved along the course of the nerve. From 500 to 1000 milliamperes should be used for one-half hour, three times a week. Diathermia is the most penetrating application of the high frequency current.

In some cases, the vacuum electrode introduced in the rectum will cure hemorrhoids. Fissure-in-ano will sometimes be cured by surface treatment and besides the rectal electrode, stretching the sphincter ani, will have a beneficial action. Eczema can sometimes be checked and I have seen two cases of seborrhea capitis which were greatly benefited by these treatments.

Men past fifty frequently complain of loss of sexual power and the usual aphrodisiacs yield no permanent results. I have treated several of these cases by applying an effluve over the lower part of the spine and over the genital organs, also through the rectum, and have seen decided improvements in some cases. Another method is to use diathermia, one electrode over the lower lumbar vertebrae and the other over the pubis, applying from 500-1000 milliamperes for one hour.

Diathermia (Gk dia,—through, therme,—heat) is one of the best methods of local treatment. It is produced by the d'Arsonval current which is bipolar. When a part is to be treated, as for example the knee, a piece of flexible tin is placed on one side, another on the opposite side and each one is connected by means of a spring clip connector. The current varies from 100 to 1500 milliamperes and it is practically an application of electrically generated heat. The temperature of the tissues is increased and an entire new blood supply is brought to the part. It is possible to bring about coagulation and produce a slough by applying a strong current. Diathermia is the most penetrating of electric treatments and enables us to treat deep tissues. When the electrodes are applied to the chest, one in front and one in back, and increased blood supply is rushed to a part of the lung, the internal temperature of the part is increased and as the tubercle bacilli do not thrive in parts rich in blood, the treatment is effective in many cases of pulmonary tuberculosis. This also applies to tuberculosis of the bones, it is possible to bring new blood to the bones affected. This method of treatment makes it easy to treat any part of the body, the application can be made so that the same amount of heat penetrates all the tissues, or heat can be concentrated on one electrode; by means of a hot wire milliamperemeter it is possible to

regulate the current and it is more convenient to use high frequency currents in this form.

If the electrodes are of the same size on each side of



Fig. 19. Diathermia treatment of shoulder, showing one metal disc on front and one on back.

the part to be treated, the current is uniform and there is the same amount of heat in front as in back. If the electrode is smaller on one side, there is more heat on the smaller electrode as concentration is greater, therefore,

in treating bones and other parts where concentration is desired in a certain area, the smaller of the two electrodes is placed on the affected part. Ordinary flexible tin can be used and there are metallic plates made for this purpose. It is well to use salt solution on the electrode as it gives better contact; in treating joints and other irregular surfaces, a more satisfactory contact is obtained by using flexible material, when a large flat area like the chest or abdomen is to be treated the metallic electrodes will answer. If the contact on the skin is not perfect, a spark comes between the metal and the skin which is not only disagreeable to the patient, but is apt to blister the skin. It is possible, by means of adhesive plaster to obtain a good contact on the skin and a gauze bandage will serve to hold the electrodes next to it. Carefully bandaging the electrodes, I have not been obliged to use salt solution; the patient lies upon a table without discomfort during the treatment.

The average treatment should be given for thirty or forty minutes, never less than this, every day or every other day at first, later coming down to once or twice a week. The average patient will take about 700 milliamperes, although some will stand 1000 or more without discomfort. I usually give the treatment to the point of discomfort. When the patients say it is too hot, I reduce the current to the number of milliamperes that does not cause discomfort and continue this dosage throughout the treatment. When the electrodes are removed the skin underneath is very red and moist.

In the chapter "Prostatic Hypertrophy," I have spoken of the use of diathermia. I find that some cases of prostatic hypertrophy are relieved by this treatment when properly given and if continued over a long period of time. Sometimes an electrode 3×4 inches over the twelfth dorsal spine and one 4×6 inches in front over the pubis, employing from 500 to 1000 milliamperes, will

sometimes relieve a case of simple hypertrophy. It is well, however, to remember that many cases of prostatic hypertrophy are malignant.

Tic douloureux, which is so troublesome and difficult to treat, will often yield to diathermia. A piece of flexible tin 2×2 inches is used on the affected side and one

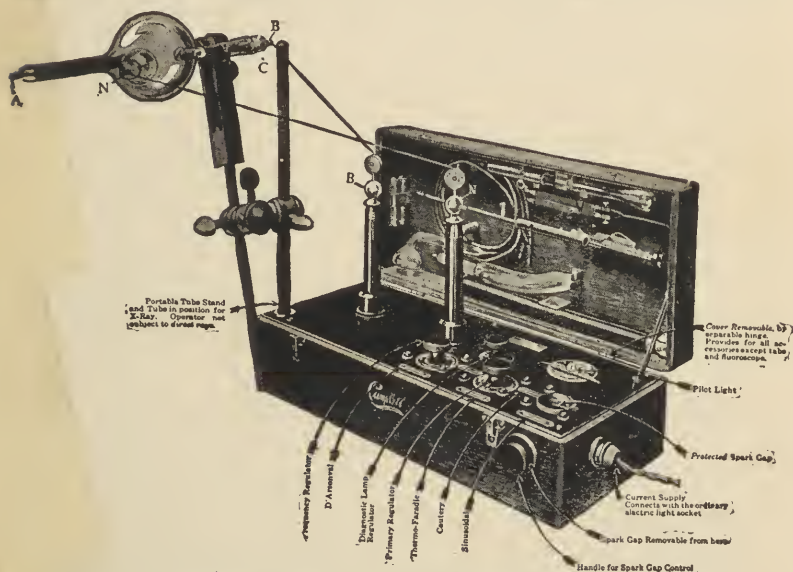


Fig. 20. Campbell Model "E" Portable high-frequency apparatus.

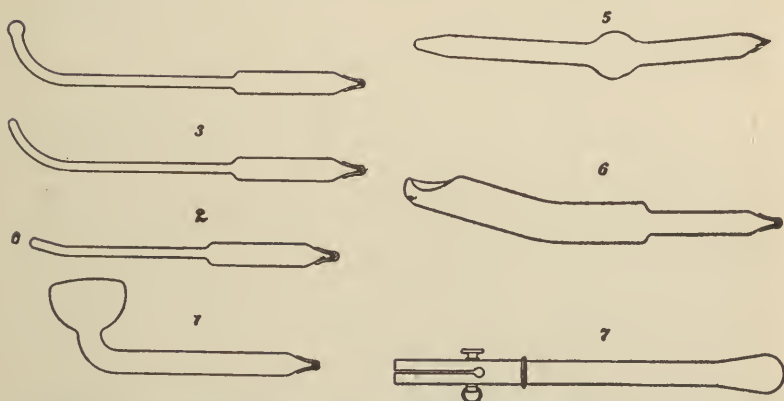


Fig. 21. Campbell Glass vacuum high-frequency electrodes, including surface, nasal, urethral, throat, plain vacuum, vaginal and rectal electrodes.

3 × 4 inches on the opposite side, applying from 500–900 milliamperes for one-half hour, repeating the treatment every other day. In conjunction with this, iron should be administered internally in the form of elixir of iron, quinine and strychnine phosphates, or hypodermic injections of iron, arsenic and strychnine may be used with benefit. Effluve with a mild current will often help these cases after resection or the injection of alcohol has failed. Sometimes it will be necessary to continue the treatments for a long period of time and when the patient has taken a few treatments it is safe to increase the dose to 1000 or more milliamperes. It is well to have the patient on a table during the treatment and a bandage applied on the face will hold the flexible tin in contact with the skin. The pain is usually relieved after a few treatments and many times the result is a permanent cure.

Lumbago and symptoms commonly said to be due to sacroiliac relaxation will often be cured by diathermia. A piece of flexible tin about 3 × 6 inches is placed on the back over the affected area and one 4 × 7 inches is used on the abdomen; adhesive straps hold the tin plates on the skin and then a bandage is applied around the waist. From 500–1200 milliamperes are given and should be used for one-half hour, repeating every other day until a cure is effected. Effluve sparks may also be used after the treatment with diathermia. Vibration will work well in some cases, considerable pressure being exerted over the painful parts.

Senile arthritis will often be relieved by high frequency currents and if several joints are involved, autocondensation, 500–900 milliamperes, should be used, after which a surface electrode can be applied for eight or ten minutes. If a single joint is involved, diathermia should be resorted to; pieces of flexible tin applied on each side of the joint, and made to conform to the shape of the joint.

Bier's hyperemia will relieve some cases and heat and vibration can be used simultaneously.

The Morse Wave Generator is another form of treatment that yields satisfactory results. This apparatus gives both a direct and alternating current and is employed for neuritis, lumbago, migraine, prostatic enlargement, rheumatism and constipation.

Senile arthrosclerosis, which is a hardening of the joints, with stiffening as a consequence, is difficult to treat in old age. Diathermia offers one of our best means of treatment and the methods described above for senile arthritis have given good results.

Fractures in old age are often followed by a stiffening of the joint and pain upon motion. When possible, I begin early treatment with diathermia in order to prevent this. Effluve and vibration will also benefit these conditions.

Some cases of dyspepsia, gastritis and colitis will be benefited by diathermia, one electrode being used over the affected part and the other on the back. It is well to place these patients on a table as the concentration of blood in the abdomen may cause them to feel faint.

I have treated some cases of catarrhal deafness with the high frequency current and have seen good results. Effluve is used in the ear, a mild current applied for eight or ten minutes. In some cases of tinnitus aurium this treatment will be of value.

Dr. A. C. Geyser of New York and others have obtained excellent results in treating pulmonary tuberculosis by means of diathermia. Geyser has also had good results in some malignant growths, healed by diathermia (*Med. Council*, April, 1917). He uses for cancer of the breast, a round piece of flexible tin of about three inches in diameter, and moistens the electrode with soap lather to bring close contact with the skin; on the opposite shoulder blade he places another piece

of flexible tin at least four times the size of the one in front. About 100 milliamperes for each square inch of the smaller electrode is used.

Some cases of angina pectoris are relieved by diathermia, a piece of flexible tin being applied in front and a larger one in back, giving the usual treatment of one-half hour as mentioned before.

The selection of the apparatus is of great importance as small machines do not give satisfactory results. The larger pieces of apparatus which have a multiple series spark gap, cooled by an electric fan or a pump, will permit a uniform application of the current for a long period of time. At present I am using Wappler's Telatherm, which is cooled by an electric fan under the De Kraft spark gap, and the Thompson-Plaster Model F cabinet also proves very satisfactory. This has a pump which is attached to the spark gap and the cool air passing through the gap keeps it fairly cool and clean. There are many combined treatments that can be given on this apparatus.

Electrotherapy is developing into an excellent addition to our therapeutics. In the Hôtel Dieu, Paris, the professor of clinical medicine has charge of the radiographic and electrotherapeutic departments, and, in this way he uses the electric treatments in conjunction with his clinical work.

CHAPTER XXXIV

ALCOHOL AS A REMEDY

Many old men and women have been accustomed to take a certain amount of alcohol in some form each day. For twenty years, perhaps, a pint of whiskey has been as much a part of their daily life as their bread and butter.

It used to be considered natural and legitimate for an old man, when the declining point came, to take a stimulant each day; alcohol was frequently prescribed by the old doctors for gastric disorders and in convalescence from exhausting disease. If his patients were ill, a doctor would insist that they should take the usual amount of stimulant, perhaps increasing the dose, yet it certainly was unusual to see an old man intoxicated.

In therapeutics there always have been reactions, and these reactions in the use of certain remedies come and go. The great French masters, Franck, Laennec, Chomel and Trousseau, found alcohol a remedy of importance and indispensable in certain conditions. I know of no observations more reliable than those of the late Dr. Abraham Jacobi. He was one of our few therapeutic optimists and one of the first clinicians to advocate alcohol in its full effect in certain conditions.

Whiskey, brandy or wine will usually improve digestion if taken a short time before eating. Old people who do not take much exercise often suffer from weak digestion, and alcohol will improve it. In convalescence from acute disease, when recovery is slow, alcohol is often useful. Sometimes in acute illness there will be ex-

treme prostration; the cause may be senile bronchitis, nephritis, diabetes, or you may not be able to discover it. One fact stands out, the patient is steadily growing weaker, and strychnine or other stimulants may be of no use. In these cases we should employ alcohol to its full physiologic effect, and by this I do not refer to small doses. The full effect is observed when a red spot comes on each cheek, and then we should give enough to keep the patient in this condition until the disease begins to abate. Give a tablespoonful of whiskey or brandy every half hour to its full physiologic effect, repeating every hour if necessary to keep the flushed spots on the cheeks.

Although alcohol may increase congestion in senile pneumonia, if the patient is prostrated, I give alcohol to its full effect. Often an old man will be in a dying state, gasping for breath, and the family calls upon you to make the last few hours comfortable. In these cases alcohol in its full effect will relieve the extreme suffering. This may apply to the last stages of kidney disease, heart disease or tuberculosis. I have used brandy in the last stages of pulmonary tuberculosis in young persons who were facing a horrible death, gasping for breath in the last few hours of the disease and yet conscious of everything.

In some cases of diphtheria where there is great prostration and dyspnea, alcohol has an excellent effect, in addition to antitoxin. In its full physiologic effect it may check dyspnea and may be a life-saving measure. If profound toxemia is present and the patient is steadily getting worse, in spite of large doses of antitoxin, I believe that alcohol in its full effect may save him; it often seems to tide him over the critical stage of the disease. It is said that when antitoxin fails we may rest assured there is nothing further we can do; we must not overlook the value of alcohol in these cases.

I recollect a man, aged seventy, who had bronchopneumonia, with extreme prostration; his temperature was subnormal. I gave brandy to its full physiologic effect, until a red spot appeared on each cheek, and gave a sufficient amount to keep him in this condition until the disease began to abate. Some days he took a pint of brandy. This can be done in many cases of senile pneumonia, where there is great prostration, and in many cases of senile diabetes with impending coma.

In order to obtain the full physiologic effect the doses used are most often large—a quart a day in some cases—in advanced life. *Physicians ordinarily use alcohol in too small doses.* Small doses may be harmful, and it is surprising how large a quantity a patient prostrated by fever or in convalescence from an exhausting disease will take. However, there is always danger of exciting a catarrhal condition of the stomach if too much is used; it may cause gastritis or vomiting of food which would seriously interfere with convalescence. Alcohol cannot be used indiscriminately, but must be carefully measured, and it is well to give it with food. A safe procedure is to lessen the dose when the flushed spots appear on the face, as some individuals may not require large doses.

In connection with the use of alcohol as a remedy, the question of forming a habit is often mentioned. After having taken alcohol regularly for several days one might think the patient would want to continue it. I have observed, however, that this is not so; I have seen many cases where, the moment the disease improved, alcohol was discontinued suddenly and the patient did not ask for it, nor require it. *Alcohol taken for relief in an acute disease will not form a habit.* Nevertheless, to continue its use after the patient begins to improve, to check some symptom, such as nervousness, would not be safe.

In senile debility, especially without organic disease, alcohol in some form is of benefit. However, many cases of senile debility depend upon diseased kidneys, and if there is nephritis, alcohol may be detrimental. When a man has been in the habit of drinking a little each day, and has nephritis, it is advisable to let him use alcohol in the form of red wines, as they are less irritating to the kidneys.

Ale and beer, as well as wines, are sometimes good for senile patients. A glass at luncheon and one or two at dinner will often facilitate digestion; sherry and port give tone to a weak stomach. In cases of chronic nephritis Bordeaux or red wine is well borne, besides acting as an excellent tonic.

Many old persons suffer from indefinite symptoms which do not point to any particular disease. There may be sleeplessness, nervousness, numbness in the legs and arms, loss of appetite, indigestion, weakness, melancholia and indefinite pains at night. This is particularly observed in town dwellers who lead a sedentary life, spending most of their time indoors. In these cases wines or whiskey, taken in small doses with food, will suppress many of these disagreeable symptoms.

Physiology has been a failing guide as to the exact value of alcohol as a food; there are so many conflicting statements the physician has to form his own conclusions, according to his personal experience.

Some aged individuals are harmed by the use of alcoholic stimulants. In other cases alcohol may be used for a few days with advantage and then be contraindicated. It is well to watch the tongue carefully, if it gets dry and parched, alcohol is usually doing harm and should be discontinued.

The following rules in administering alcohol as a remedy in fevers were made by Dr. Armstrong, and may be of value to the clinician:

1. If the tongue becomes drier and baked, alcoholic stimulants are generally doing harm; if it becomes moister, they are doing good.

2. If the pulse becomes quicker, they are doing harm; if it becomes slower, they are doing good.

3. If the skin becomes hot and parched, they are doing harm; if it becomes comfortably moist, they are doing good.

4. If the breathing becomes more hurried, they are doing harm; if it becomes more and more tranquil, they are doing good.

Ringer states that alcohol is useful when it produces sleep and quells delirium.

The aged often have formed unsatisfactory habits, yet to change them is not advisable. When an old man is ill, no matter the cause of his illness, he should take the amount of alcohol he has been in the habit of taking each day. It may even be necessary to increase the dose in order to get the full physiological action. It may be disastrous to change an old man's mode of living. There are many old persons who are suffering for want of alcohol in some form. In order to relieve them it will be necessary to resort to narcotics; there is a close relation between the two. Alcohol is less harmful, as it does not check secretions and excretions.

CHAPTER XXXV

INFLUENZA IN THE AGED ¹

Hippocrates described the phenomena accompanying an epidemic cough, or influenza which took place in Perinthus, and was complicated with pulmonic affections, angina, paralysis, etc. He observed that any member who was exposed to fatigue was most liable to be attacked and noted that women were less likely to be affected than men since they were less exposed to the air. In women, he found the attacks were mild, but when a febrile rigor supervened, the attack speedily became fatal.

The lowered resistance of the senile organism caused by heart disease, emphysema, weakened condition of the gastrointestinal tract and nephritis, predisposes to influenza. It is frequently the disease which ends the life of a chronic sufferer from cancer, Bright's disease or other maladies.

Influenza is often fatal in old age. An arteriosclerotic patient, or one suffering from emphysema, bronchitis, nephritis or diabetes does not bear this infection well because the vital spark is already weakened. The complications are fully as important as the disease itself.

The various epidemics we have witnessed were in all probability due to a mixed infection, although the streptococcus pyogenes, pneumococcus, pneumobacillus and staphylococcus are secondary agents to Pfeiffer's bacillus. It is not always easy to cultivate the latter, and it may lead to a mistake in diagnosis; it is cultivated with difficulty on ordinary media, much more easily if

¹ *N. Y. Medical Journal*, May 1, 1920.

placed on blood-agar, with stabs of the staphylococcus aureus with it at intervals.

Around each colony of staphylococci the Pfeiffer's bacilli will be twenty times as large as those of the pure control culture (Dieulafoy). This cultural satellism (Meunier) is obtained in twenty-four hours and is a valuable assistance in finding Pfeiffer's bacillus.

An old person who is debilitated as the result of some chronic disease will suffer from an aggravation of his condition while fighting the infection itself. A man with interstitial nephritis may have hyperacute nephritis, which will give nearly every symptom of pneumonia and lead to a mistaken diagnosis. Again, influenza will often cause nephritis as a complication and it will be the beginning of a long illness. Convalescence in the aged is slow, even without any complication.

Influenza in the aged begins as in maturity; it is ushered in with coryza, conjunctivitis and sore throat. The preliminary symptoms are headache and general aching all over the body, the temperature is subfebrile, the aged do not usually have a febrile temperature in any illness; the pulse may or may not show changes. The temperature and pulse are uncertain and the only safe rule in diagnosis is the counting of the heart beat with a stethoscope since the radial arteries are usually sclerosed. The pulse may be irregular and rapid. Respiration must be counted as it gives one of the most valuable signs of the progress of the disease. Failure to count respiration in aged individuals is a serious mistake. There is great prostration at the beginning of the disease and the aged person may develop pneumonia without showing many local signs. Senile pneumonia is different from that seen in adults and examination of the chest may not enable the physician to make a correct diagnosis. Respiration is increased; there may be dyspnea and cyanosis, sometimes a low, muttering de-

lirium and often the patient will hit his chest with his hands, seeking relief from his distress. There may be little or no cough and the characteristic picture of the sputum as seen with pneumonia in adults is lacking. The physical signs in the chest are in complete disaccord with the gravity of the condition; the temperature runs a subnormal course, the pulse-rate may be normal and the expectoration the same as that which usually accompanies bronchitis.

The patient may be apparently progressing well and a favorable prognosis given. Sometime ago I saw an old man who had influenza and seemed to be progressing satisfactorily; I visited him at noon, and at five o'clock had a telephone message that he had hemoptysis. His breathing was distressed and a few hours later he died from pneumonia. It is indeed difficult to make a diagnosis in cases of senile pneumonia and we should depend upon the respiration chart as our greatest aid, respiration will show considerable increase before the pulse gives signs of gravity.

Some cases end in gangrene of the lungs, but they are rare. Pleurisy is usually present, but in the aged it is not necessarily accompanied by pain as sensibility is greatly reduced. As aged patients often have arteriosclerosis, there is usually a cardiac disturbance and influenza accentuates the symptoms due to it; cardiac action rapidly becomes affected and the patient may die suddenly from asystole which is the outcome of dilatation; this causes us to give a cautious prognosis in every case of influenza in the aged.

As the stomach is debilitated the gastrointestinal form may be seen either alone or in combination with other types. There may be vomiting, diarrhea, cramps in the abdomen, gingivitis, stomatitis, aphthous stomatitis and cachexia as a result of the small amount of nourishment taken. The prostration may resemble that

caused by typhoid fever. Some epidemics are characterized by a biliary form with jaundice; the epidemic of 1775 in Vienna showed a marked biliary form (Stell) and the Paris epidemic of 1830 presented symptoms resembling those of cholera. (Hardy and Behier.)

Cholecystitis is a common sequence of influenza in old age and may cause serious trouble. I recently saw a man of sixty-three who had had influenza several months ago; he had had two attacks of cholecystitis and the last attack was followed by pneumonia of the right lung and he also had auricular fibrillation. He has completely recovered.

Nervous influenza is common in old age; headache may be intense, a severe throbbing pain, and may be associated with vomiting, insomnia and photophobia. It may cause pseudomeningitis, and, moreover, a genuine meningitis may develop. Neuritis is a common sequel of influenza and may last several months. There is great prostration accompanying the nervous type and some cases of encephalitis, myelitis, polyneuritis and psychoses following influenza have been reported.

Influenzal nephritis is one of the most serious complications and may be the beginning of chronic Bright's disease. It is well, with the aged, to carefully watch the kidneys and an increase in albuminuria is an indication of the extent of the toxemia. The condition of the senile kidneys is so important that it is well to protect these organs in every kind of illness. In fatal cases the urine is scanty, bloody and the patient dies of anuria and uremia.

Influenzal toxemia is a very serious condition and after the first day, patients present a toxic appearance; the tongue becomes coated, the breath has a foul odor and the skin becomes slightly yellow. Even with active catharsis, the toxins will accumulate unless great care is taken. The toxemia causes prostration and often-

times in convalescence, tonics are administered without benefit when an active treatment for toxemia is indicated.

Treatment

In the *Medical Review of Reviews*, February, 1920, I gave an account of the chloral hydrate treatment for influenza, as administered during the epidemic of 1919, in France, in Mobile Hospital No. 7, with the American Expeditionary Forces, where the results were excellent and rapid in most cases.

Invariably patients show an inflammatory process in the throat, although they do not complain of a soreness. It is a recognized fact that the throat is the portal of entry of the disease-producing germs and it is logical to believe that treatment given with this in view will produce good results. Routine examination of the throat will reveal a reddened condition. The principle of Fanning's treatment employed in our hospital was (1) to rid the system of toxins already formed and (2) to prevent their further development. The routine treatment was as follows:

(1) 4 grains of calomel, followed in three hours with one-half ounce of magnesium sulphate.

(2) gargle every half hour with a 2 per cent solution of chloral hydrate.

A soldier would enter the hospital in the afternoon, quite ill, presenting a toxic appearance and perhaps with a temperature of 102° F. In many cases, under this treatment, the man would be returned to duty in twenty-four hours.

I have used the treatment in private practice and it gives excellent results; recently I saw five persons quite ill with influenza, in one home. Every one used chloral hydrate gargle except the little girl of five years and

the next day there was a decided improvement in all cases except the child's. Clinically, it works rapidly in many cases.

It is difficult to give the theory of the action of chloral hydrate. Thus far theory has been of little benefit in the treatment of influenza. Chloral was discovered by Liebig in 1830, it being the product of the action of dry chlorine on ethylic alcohol, a chlorine derivative of aldehyde, closely allied structurally to the group including alcohol and chloroform. Horand and Peuch used it as a local anesthetic and it was found that it often relieved the pain caused by inflammatory conditions of mucous surfaces. Externally, chloral hydrate has a marked antiseptic action. (Reynolds Webb Wilcox.) Burgraeve first pointed out its value in dressing ulcers, but it is used chiefly in ulcers of a bad character, particularly gangrenous ones.

Dujardin-Beaumetz, Hirne, Martineau, Cadet-Cassecourt and Fereol showed that a one per cent solution acted favorably on gangrenous bedsores in enfeebled patients; Crequy used it in ulcero-membranous stomatitis. In the throat it has an antiseptic and anesthetic action. Chloral may be altered in some way when mixed with the secretions of the mouth; possibly its effect depends upon its chlorine derivative; it might be absorbed through the mucous membrane and have some effect after absorption.

It is safe to employ chloral hydrate in private practice, even with infants. Eight five-grain tablets in four ounces of water will make a 2 per cent solution. It can be prescribed as follows:

℞	
Chloralis Hydratis	℥ j
Aquae	f ℥ j
Elixir Aromatici q. s. ad.	℥ ij
Misce et ft. sol.	

Sig.: One teaspoonful in half a glass of water as a gargle every half hour.

This will make a 2 per cent solution and can be used frequently, but with care.

For an aged person suffering from influenza, the treatment should be the same, but for catharsis, which should not be too drastic. If the patient is robust, one grain of calomel in divided doses, followed by a saline; if physically frail, two compound rhubarb pills may be used.

The throat should be gargled every half hour with a 2 per cent solution of chloral hydrate. Supportive treatment should begin early as prostration comes quickly. If there is no evidence of kidney disease, one grain of quinine sulphate may be given every 3 hours, but if there is prostration, $\frac{1}{60}$ grain strychnine sulphate is given every three hours, increased later to $\frac{1}{30}$ grain every three hours, if necessary.

Whiskey or brandy is a valuable adjunct to treatment, I should say a necessity, one-half ounce being given every three hours if there is prostration. When weakness is extreme, alcohol should be given in its full physiologic action, a half-ounce every hour until a red spot appears on each cheek, then enough to prolong the full physiologic effect.

Rest is essential, but old people should not be allowed to remain in bed if we can permit them to get up. It is often difficult to force them to sit in a chair, especially when they are prostrated. Old patients will not do well in bed and it is a good rule to "keep senile cases out of bed."

A nourishing diet should be given; milk, egg-nogs, broths, etc. If influenzal nephritis accompanies the condition, it may be necessary to use a milk diet, with cereals, and tea and coffee should be taken.

The heart should be supported early with strychnine; if it is irregular $\frac{1}{40}$ grain of sparteine sulphate should be given every three hours. Digitalis is an uncertain remedy to use in old age, but there are some cases in

which it is beneficial. I prescribe the fat-free tincture and use five minims every three hours, these small doses work fully as well as larger ones in old age.

It may be necessary to use oil of camphor hypodermically as a stimulant if there is great prostration. Caffeine may be used hypodermically as a stimulant and if there are signs of serious toxemia, which is indicated by the coating on the tongue, it is well to use mercury and chalk, one grain every three hours, five doses, followed by a saline laxative. A bowel movement each day will save many old patients from death, and oftentimes toxemia being lessened, the heart will be relieved of its extra work.

Convalescence is often protracted and requires great attention. Urinalysis should be made frequently and if there is a kidney complication attention should be given to it. Ordinarily, I prescribe a tonic of elixir calisaya, a teaspoonful every three hours, combined with a tablet of $\frac{1}{60}$ grain of strychnine sulphate three times a day. The elixir of iron, quinine and strychnine phosphates will work well in many cases, as a tonic.

Attention must be directed to the intestines in convalescence as the toxemia following influenza is apt to continue for a long time. Vittel water, a pint or more a day, will have beneficial action.

CHAPTER XXXVI

THE CHECKING OF HEMORRHAGE, SECRE- TIONS AND EXCRETIONS IN THE AGED

CASE I.—A woman, aged sixty-five, had eczema which manifested itself on the arm, leg and chest. There was an exudate on the surface of the skin but under treatment the condition improved and at times the eruption would entirely disappear. When the oozing was checked or when the eruption entirely disappeared she always had a severe attack of asthma.

The attack lasted only a few hours, but she complained of headaches, dizziness, and a sensation of pressure in the chest which would remain several days. Suddenly the eruption would reappear, which seemed to relieve her immediately.

CASE II.—A woman aged seventy, complained of darting pains in the arms and legs, a severe backache and headache. She had edema of both legs and a general feeling of malaise and would remain in this condition for several days until an ulcer appeared on the leg, which seemed to bring relief within a day or two. These ulcers were very painful and always accompanied by an intense redness in the surrounding tissues. In the center of the ulcer there formed a black area which would take several days to separate from the sore.

Every kind of treatment seemed to make the condition worse, ointments acted like poison and dusting powders would cause the sore to heal too rapidly, as evidenced by various symptoms. The only treatment that seemed to agree with the patient was a wet dressing with a small amount of alkaline antiseptic solution in a few

ounces of water. Treated in this way the sore did not heal too rapidly, in fact took three or four months to heal. During this time she felt much better, and when the ulcer had apparently run a certain course it healed without causing any untoward symptoms.

For several months she would be free from ulcers and uncomfortable feelings, but in time similar symptoms would reappear, to be relieved only by the eruption of a sore, sometimes on the finger, once on the face, and sometimes on the legs. These ulcers were of the trophic type and not due to syphilis or tuberculosis. I have seen this patient very ill for several days and on one occasion felt that death would soon come unless Nature caused one of the sores to appear. Before the illness came to a fatal point an ulcer appeared and relieved her in a short time.

I have seen several cases similar to this, but due to tuberculosis, and not of the simple trophic type described in this case. Tuberculous sores are very common in the aged and if healed too rapidly will produce bad results. A tuberculous bone disease which discharges through a sinus may be compatible with good general health as long as it is not disturbed and not healed. Ulcers of any kind should be treated in the same manner and not allowed to heal too quickly.

In the aged, a discharge from the ears or a chronic rhinitis should not be checked, in fact, a safe rule in senile cases is not to check any secretion or excretion suddenly. Epistaxis should be treated with ice on the neck and not by a method that will suddenly stop the hemorrhage.

Excessive perspiration in the aged is very disagreeable, but is not common, because the skin is atrophic and as a result usually very dry. However we meet cases of excessive perspiration, either general or localized, and at night perspiration, when patients have to get out of bed because of nocturnal micturition, causes a

very uncomfortable chill. This excessive perspiration is often a symptom of nephritis, and rids the system of urea. If the perspiration is checked the kidneys do not respond to the increase in work and there is congestion of the respiratory and other internal organs as a result. It is often serious to check this excretion and no matter how disagreeable the condition it should not be interfered with.

In the aged, any form of skin disease which is accompanied with a discharge should not be treated with the view of healing the skin quickly. I have seen cases of senile cancer, especially of the breast, which would not apparently interfere with an old person's general health for several years as long as the discharge, no matter how offensive, was not checked. As long as there is free drainage and no drastic treatment, Nature seems to allow the patient to live comfortably. An ambitious surgeon who believes that the cure of an abnormality consists in its removal from sight, would remove the cancer, as a result the patient would fail and die within a short time. Radical interference in these cases should be very carefully considered before being resorted to.

Checking a diarrhea in senile cases is also a dangerous procedure because, like excessive perspiration, it is frequently a symptom of nephritis or may be due to any form of toxemia, it being Nature's effort to rid the system of certain poisons. It can be readily seen that a checking of such a diarrhea would have bad results and sometimes a fatal issue. If it becomes necessary to check the discharge, for example, in cases where it causes extreme prostration, give a remedy for the bowels, administered only after every second or third movement. In this way the excretion will not be checked too rapidly. Sometimes the diarrhea will be a symptom of cancer of the bowel, and should not be checked. I recollect seeing an old man who had chronic diarrhea for

several years, a physician checked the diarrhea, the old man died in three days.

In the aged excessive excretions and secretions are usually a compensation of some other function. For example, a diseased kidney, which is unable to carry on its work, may depend upon the skin or bowels to perform a part of its function of elimination, Nature changes the channels of elimination and in time this change in function is in fixed paths, in other words, a perverted function in time assumes an action normal to itself. To interfere with this would cause extra work to be thrown upon the diseased organs which are not able to carry it on. Frequently, hyper-excretion of the kidneys is a symptom of parenchymatous nephritis.

Bronchitis and other diseases of the respiratory tract often produce excessive bronchial secretions in the aged, but as long as the secretion is not checked there is no real discomfort. By checking the secretion we may bring on an attack of asthma.

Fistula-in-ano in the aged is often of a tuberculous nature and the discharge may be serous, purulent and of a fetid character. I have seen several of these cases which have been operated upon, healing and checking of the discharge produced a general feeling of discomfort and loss of weight. In one case I remember a man lost twenty-five pounds as a result of a cure of the fistula and has never been well since. We must not forget that it is not always the object, in the aged, to heal, or correct an abnormality.

In senility, we are frequently confronted with a hemorrhage which we think should be checked. It may be epistaxis, acute or chronic intestinal hemorrhage, hematuria, or metrorrhagia. In any event, unless it appears that it may cause death, it is safer not to check it immediately. A chronic hemorrhage of the bowel may be due to cancer or diverticulitis, but in many cases it does not

seem to interfere with the well-being of the patient. Very likely to check it will cause untoward symptoms. Hematuria should not be treated with the aim of rapidly curing it, in many cases I did not treat it at all and the patients lived a long time without discomfort.

A woman, aged sixty-five, sent for me because she had a hemorrhage of the vagina. Several years ago she had a cancer of the cervix which was removed, and had thought herself well. Suddenly, without any warning, she had a hemorrhage which later proved to be due to a recurrence of the cancer. In this instance I did not check the hemorrhage, and, in a short time, with rest in bed it stopped naturally and to the time of her death she never had another.

I think that we may safely come to the conclusion that all secretions and excretions in the aged should not be checked unless in cases of extreme emergency.

CHAPTER XXXVII

DIAGNOSTIC ERRORS IN THE AGED

A man, aged ninety, complained that he was unable to sleep at night. His daughter showed me a tube of hypodermic tablets containing $\frac{1}{4}$ grain of morphine sulphate, which his family physician had given to him upon his request for a soporific. Upon questioning his daughter I found that the old man slept in his chair several times a day and when night came naturally could not sleep. When his daughter told him the real cause of his insomnia he became angry.

The aged do not realize the amount of sleep they get and they all make the same complaint; that is, that they cannot sleep. A placebo will make them sleep as well as morphine, in fact better, for morphine usually makes them nervous.

The aged are apt to falsify symptoms in order to excite sympathy, and they may have every symptom of which they hear. An old lady told me that she had taken six $\frac{1}{4}$ grain tablets of codeine sulphate at night without finding relief from a pain in the leg. As a matter of fact she had not taken any tablets and probably had no pain, but as a physician was coming to the house to see another patient she felt it was no more than fair that she also should have attention.

We must be on our guard, however, and not attribute too many symptoms to malingering. I once had an old man whom we believed was malingering, but when he suddenly died from uremic convulsions we realized our grave mistake. In the aged pain is not a safe clue. Sometimes owing to decreased nerve sensibility we may

find appendicitis, peritonitis or strangulated hernia without any pain. Many cancers of the gastrointestinal tract are painless, but on the other hand a senile basal-cell carcinoma of the skin which has been painless for a long period of time as age advances becomes painful. We may have pneumonia without pain in the chest and many fractures are painless, a mistake could easily be made in diagnosis.

A diagnosis of arteriosclerosis or calcareous degeneration of the arteries has little significance in the aged. These are normal senile changes and many symptoms ascribed to these conditions are due to other causes.

It is very unsafe to depend upon the pulse rate or the quality of the pulse because of the sclerosed condition of the radial arteries. Many old persons will have an excellent pulse, yet may be dying. Always count the rate of the heart with a stethoscope.

Counting respiration is a necessity and if we neglect it, many cases of senile pneumonia will escape notice because there are few external manifestations of the disease.

Many cases of so-called pneumonia are in reality congestion of the lungs. If the patient appears too sick to have mere senile congestion of the lungs or bronchitis, we think of pneumonia.

Many cases of uremia and intestinal toxemia are labelled typhoid fever. In the aged the latter disease is very rare; I have heard physicians make a diagnosis of typhoid fever in the aged, but believe that if the true cause of the condition had been ascertained it would have been toxemia. Uremia oftentimes causes fever and every other symptom of typhoid and if the patient has the strength to withstand the severity of the attack, it will run a course similar to that of typhoid and take about three weeks to abate. From the appearance of the

tongue to the low muttering delirium and cold, clammy perspiration, the disease has the symptoms of typhoid fever. It is often associated with an acute inflammation of the kidneys, and if casts and blood are present in the urinary sediment, death is almost certain.

Again, intestinal toxemia may produce the same symptoms and present the classical picture of typhoid. I recollect a man who had frequent attacks of a fever of this kind, the temperature remained about 103° F. for several days, then abated. If the true cause of the affection had not been discovered and treatment had been given for typhoid fever, the patient would probably have succumbed. Pyelitis also may cause similar symptoms and easily be mistaken for typhoid fever. Chills are not common in cases of senile pyelitis, but a high fever with prostration is very common. Some cases of pyelitis and pyelonephrosis are due to cancer of the colon or cancer of the liver. I remember a man who had typical clinical symptoms of pyelitis and was treated accordingly. He did not respond to treatment and on further examination it was discovered that he had cancer of the colon. One night he was suddenly taken ill, with very severe pain in the right side, and died in two hours. I knew a woman who had been suffering from nephritis and pyelitis. In time she developed symptoms of gallstones, was operated upon and cancer of the liver was found. In this case nephritis was secondary to cancer of the liver.

Senile glycosuria may be due to senile degenerative changes and not to diabetes. The aged do not usually develop acidosis except in coma, caused by some other disease. For example, uremic coma may have a tendency to bring on acidosis. The diagnosis of diabetes in the aged is important because injudicious treatment may cause fatal results. Ether, chloroform or nitrous oxide may cause acidosis and this should be borne in

mind in anesthetizing patients. It is a great mistake to call senile glycosuria due to normal process of degeneration, true diabetes.

Senile patients are apt to tell you they have not experienced certain symptoms because they believe it may prevent a painful and disagreeable examination. They will deceive you, perhaps, unintentionally, because they forget, or do not observe.

History-taking in the aged is very uncertain. For example, I asked an aged woman in a hospital how frequently her bowels moved. She was greatly disturbed by this remark, because she thought that one's bowels should move every day. A case like this is typical of a woman who does not have a bowel evacuation oftener than once a week. They will ask to take their own laxative pills in order to prevent you from prescribing a laxative. They will deceive you sometimes because they dread the pain which accompanies hemorrhoids.

I have found tumors in the abdomen of aged patients when making a routine examination and as they experienced no symptoms I did not tell them of this condition. On several occasions I have followed such cases for several years and found that in many cases the tumors did not produce symptoms. It would be a grave mistake to cause aged patients to worry when it is not necessary. I now have a patient, a woman, aged seventy, who has had a cancer of the breast for the past three years. It does not enlarge, nor does it cause her any symptoms, not even loss of weight. She does not know that it is a cancer.

Another woman, aged eighty, had a carcinoma of the breast for several years, yet lived. A surgeon operated upon her and she died a few days after the operation. I believe she would be living today but for the mistake in judgment on the part of the physician. Surgeons

make a great mistake in believing that because an abnormality exists it must be removed. Many old persons have some apparently serious affliction such as cancer, Nature keeps them comfortable, provided no one interferes with her.

In my experience, the most common cause of mistaken diagnosis in the aged is interstitial nephritis. This condition is sometimes very difficult to diagnose and the symptoms of kidney disease may be localized in other organs.

For example, we may have indigestion, gastrointestinal pain, neuritis, neurasthenia or psychasthenia due to nephritis. I am convinced that the symptoms, in half the cases commonly called senile pneumonia, are in reality due to an acute exacerbation of chronic nephritis. Lung symptoms and heart manifestations are commonly caused by nephritis. We depend too much upon chemical urinalysis when we should depend upon the microscope in the diagnosis of kidney disease. Tuberculosis in the aged is not rare but does not usually cause symptoms and is often discovered only at postmortem examination. Nephritis with lung symptoms frequently simulates pulmonary tuberculosis. Senile debility due to any cause frequently appears like phthisis and senile bronchitis like the miliary form of tuberculosis. The latter disease often complicates diabetes in the aged, but does not usually cause symptoms. Tuberculous ulcers may appear, especially on the skin covering the ends of long bones.

Deafness in many senile patients is not due primarily to the ears but to the diseased condition of the kidneys. I am firmly convinced that nephritis plays an important rôle in deafness and a temporary deafness lasting an hour or two is one of the first symptoms of nephritis.

Hepatic colic is not common in the aged although gallstones may be present. The decreased sensibility of the

nerves in senility makes possible the passage of a gallstone through the ducts without pain. Renal colic, on the other hand, is quite frequent in the aged and usually accompanied by intense pain which can only be relieved by opiates. Renal colic may be mistaken for the gastrointestinal pain due to nephritis or a crisis of locomotor ataxia. Pains which have been associated with arterial spasm may effect the kidneys and simulate renal colic. An attack of renal colic may not be followed by another attack for several years.

Hematuria is common, but does not always imply nephritis. It may be of unknown origin and is compatible with good general health in many cases, it is often due to prostatic congestion, and not usually of serious omen.

In senility the narrowed lumen of arteries in sclerosed condition accounts for a lack of nutrition of the skin which predisposes it to skin affections. Senile pruritus may be of parasitic origin. Eczema may be due to diabetes or nephritis and psoriasis is frequently associated with asthma. I have seen a few cases where interfering with the skin condition brought on an attack of asthma.

In the aged the pancreas may be a cause of disturbances which unfortunately have not been thoroughly investigated so far. I have observed, in several cases such as diabetes, senile gangrene, etc., that there were definite symptoms pointing to the pancreas, the most important being the presence of fat in the stools.

Carcinoma of the gastrointestinal tract is easily overlooked as it frequently causes no symptoms. Again, we may have every symptom of carcinoma yet a roentgen diagnosis would be one of diverticulitis. Frequently the latter condition will cause blood to appear in the stools. In the aged cancer of the stomach is frequent, while gastric ulcer is rare. The scirrhus type of carcinoma is sometimes very difficult to diagnose.

Tic douloureux may be due to an unerupted molar tooth. I recollect finding this condition in a man aged fifty-six and a dentist told me he discovered it in a man of seventy-five. Neuralgia is frequently due to anemia or toxemia, and neuritis is a frequent symptom of renal or intestinal toxemia.

Vague symptoms of neurasthenia or psychasthenia may be due to lack of sexual comforts. I have a patient, a man, aged seventy, who was gradually failing and I could not discover the cause. He finally confessed that he required a sexual companion. He also complained of a large, painful testicle which he said was always relieved by sexual intercourse.

The most frequent mistakes in diagnosis we make, however, are due to an ignorance of the normal senile state. Trousseau said, to know the natural course of disease is to know half the science of medicine. We commonly say that a senile condition is due to arteriosclerosis and calcareous degeneration of the arteries. Sclerosis is a normal senile degenerative process and we must not overlook the fact that degenerated organs may work in harmony, and as long as the harmony is not broken these degenerated organs functionate in a way which is normal to themselves.

To call a normal senile degenerative change a disease is a mistake which is apt to have disastrous results in therapeutics. For example, in senile arteriosclerosis the iodides would not only produce severe gastrointestinal symptoms, but might produce a severe irritation of the kidneys.

CHAPTER XXXVIII

SENILE MALINGERING

A difficulty frequently encountered in dealing with senile cases is the determination of the pathologic condition, which gives rise to the symptoms present. In many cases the subjective symptoms, the objective symptoms and the physical signs do not harmonize, or the physician, not familiar with the normal senile changes, finds a senile emphysema, dilated stomach, visceroptosis, or hypertrophied prostate and ascribes to one of these the symptoms present. More often the subjective symptoms point in many directions and in the absence of objective symptoms the physician does not know what to look for.

The difficulty is increased when we remember that the aged frequently exaggerate symptoms, especially pain, while owing to the weakened mentality and the changes in the skin and the nerve terminals, pain is often absent in ordinarily painful diseases; that the aged are imitative and readily influenced by suggestion; that the normal senile changes may cause distress; that a pathologic condition may have existed for so long that the organism is adapted to it so that it has become normal to the individual.

The most frequent form of malingering is the exaggeration of pain in order to secure sympathy. The following is a typical case:

A man, aged seventy-two, says that he was never ill (has pock marks on his face). He complains of "feeling sick all over," says he has headache, backache, and pain in the joints, feels cold and has no appetite. There is a history of constipation, slight incontinence of urine

and dyspnea. There is no cough or expectoration, no palpitation or other cardiac symptom, but an account is obtained from the family of occasional attacks of vertigo, which he denies, presbyopia and evidently presbycusia.

The subjective symptoms did not point to any clearly defined disease except cerebral atheroma if we accept the statement of the family as to vertigo. Neither did the objective symptoms give any clue. He was irritable and insisted on his family leaving the room while he was being examined.

Examination.—Temperature normal, blood pressure systolic 170 m.m.; urine, S. G., 1020, trace of albumin, indican, no casts. Chest showed senile emphysema, heart hypertrophied, no murmurs. Tortuous temporal arteries and filled superficial veins, varicose veins in legs. Abdomen tympanitic, stomach dilated, liver atrophied, spleen not palpable, prostatic hypertrophy. Upon my pressing over various parts of the body he gave no evidence of pain but said it hurt, when questioned. It was possible to exert considerable pressure upon such parts without his giving evidence of pain if his attention was distracted in conversation. He forgot the location of a painful spot on the back a few minutes after complaining of it and pointed to a spot six inches away. Considerable pressure upon the knees during conversation brought out no evidence of pain until I called his attention thereto, then he immediately winced and pushed my hand away. Before my leaving him he requested me to suggest to his family that he should be sent to a hospital or home. His family informs me that he did not complain of being ill until shortly after a petty quarrel.

This was a case of pure malingering to obtain sympathy.

In some cases the dread of pain makes the patients

hypersensitive and they suffer acutely from a slight lesion, as a scratch or bruise. In one case of chronic ulcer of the leg the patient trembled when I approached her with a forceps to remove the slough and screamed when she saw me lift it out of the ulcer, yet when the bed covers were so arranged that she could not see what was being done she gave no evidence of pain. Suggestion and unconscious mimicry are frequent causes of malin-gering. In a small home for the aged one woman had senile pruritus. Several other women in the ward seeing this one scratch did likewise, each accusing the first of having lice. It was necessary to remove the former woman and subject the others to a bath. The sugges- tion of itching is often sufficient to create the impression and sensation of pruritus. Malingering which is in real- ity due to unconscious mimicry is occasionally seen in homes and institutions where inmates pair off with com- panions. If one has some form of tremor, impediment in gait or speech, or a peculiar motion of the body or limbs, the companion will frequently acquire it. In a case that had been diagnosed and treated as Parkinson's disease, there was the gait, attitude and the mask-like expression of this disease. The rapidity with which the symptoms developed after the patient began to associate with a true case of paralysis agitans led me to question the diagnosis. The men were separated and the malin- gerer was threatened with an operation if he did not stand erect and control the tremor. The threat pro- duced the desired result and the facial aspect changed when he was placed with a cheerful companion.

I have seen a senile tremor and a hemiplegia, acquired through unconscious mimicry, cured through separation from the original cases, but threats and actual depriva- tion of food were necessary in the senile tremor case. In this case the patient's food was taken away whenever he spilt it, and tempting dishes were offered which he

could have only if he completely controlled the tremor. He would lapse into the tremor when he thought he was not watched, but a word from the attendant sufficed to cause him to control himself. He was finally completely cured.

A lisp which an aged couple acquired from a lisping grandchild living with them was not cured until the grandchild was cured. Nothing was done in this case, as the old people imitated the child in its talk and as the child's speech improved the grandparents dropped the lisp.

It is generally difficult, sometimes impossible, to cure these habits in the aged. Abnormal motion habits are quickly formed. A few days' companionship with a person who limps will suffice to cause the companion to limp in step with the other and it will take many days or weeks to cure him. Sound or voice habits develop slowly, but once acquired it is almost impossible to completely cure them unless the imitative propensity is stimulated in the opposite direction. The lisping couple to which I referred were thus cured.

The term malingerer can hardly be applied to a class of senile cases where obvious symptoms and signs are denied. The aged frequently boast of their good health and wonderful constitution and will deny ailments and discomforts that are obvious and usually painful. On the other hand they will exaggerate former affections from which they recovered "because of their strong constitution."

The histories given by the aged are generally unreliable, their statements being almost invariably exaggerated. This applies to past as well as to present conditions. In a few cases pathologic states and symptoms are minimized. The discerning physician should be able to distinguish between exaggerated symptoms to obtain sympathy and minimized symptoms, though it is often

difficult to determine if the patient's denial of symptoms arises from weakened mentality, local degenerations involving sensory and other nerves, fear or a foolish exhibition of fortitude.

Superficial sensitiveness is generally lessened in the aged, while the pain due to inflammation of internal organs and tissues is felt less acutely on account of mental impairment, which is more marked in inflammation with high temperature. On the other hand, the anticipation of a painful examination will cause the patient to hide lesions and deny painful spots.

A patient, aged seventy-five, told of having struck his shin on the edge of a car step about a month before I saw him. He said nothing about this at home, but the family noticed that he bandaged his leg and found dried blood and pus on one of the bandages. The patient declared it was nothing, it did not hurt and there was no need to call the physician. He still refused to have a physician when he was unable to walk and the removal of the bandage caused pain. It was through subterfuge that I was able to see the injury. It was an ulcer which extended to the periosteum, the ulcer was filled with pus and slough and surrounded by a wide ring of erysipelas. He denied having any pain but screamed when I touched the ulcer with a piece of cotton.

The problem how to deal with senile malingerers is often more difficult than the determination of their condition. It seems inhuman to subject an aged individual to a painful test, and more so to institute a painful method of treatment.

The family will ask you what harm would result if the patient continued to limp or shake so long as it is only habit. Habits acquired in old age rapidly become worse and less controllable. The slight tremor, which can be controlled in the beginning, becomes an uncontrollable coarse and persistent tremor. The slight limp may be-

come a complete monoplegia. Drugs are useless in these cases and harsh measures with constant watching necessary to effect a cure. The conscious malingerers, who exaggerate symptoms, usually have a slight basis for their complaints and require medical treatment for some underlying disease, but where there is no basis for complaints as in the case described above a disagreeable placebo will usually suffice.

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CHAPTER XXXIX

SYPHILIS CONTRACTED AFTER SIXTY YEARS OF AGE

We do not often think of old persons developing syphilis, as we overlook the fact that sexual life in the aged is often conducive to the development of venereal diseases. Syphilis may be contracted in old age as in maturity. Many old patients do not consult a physician and little attention has, therefore, been given to the subject of syphilis in the aged in this country; in France, MM. Pic and Bonnamour have given considerable attention to this condition in senility. In 1878, Sigmund of Vienna concluded, upon a study of 118 cases, that, "The forms of syphilis in advanced age are less grave than in the young and the issue of the disease is more favorable." Dulac of Paris, in 1878, on the contrary, concluded that syphilis was more serious in old age. Quinquaud, 1881, noted the frequency of malignant syphilides and serious visceral localization in old age. Regoby, in 1886, demonstrated that in old age chancres and mucous patches follow a natural course for some time and then become ulcerous. Fournier insisted upon the seriousness of the disease in old age.

Perhaps one of the reasons why we do not encounter more cases of syphilis in old age is because sexual indulgence is then lessened. In my opinion, there is no reason why an old man should not be infected with syphilis, as abrasions of the penis make as good a portal of entry for the *Spirochete pallida* as in younger persons, and, moreover, vitality is lowered, which makes infection easier. However, the disease does not usually

develop as soon after exposure as it does in maturity and it may be five or six weeks before it breaks out in old age, as compared to twenty-five or thirty days in adults.

The chancre may be a typical sore or may become ulcerated, often phagedenic, and it may be so ulcerated that it is difficult to distinguish it from epithelioma (Merklen). Often the sore is very small and may pass unnoticed, but it is always indurated, which is one of the diagnostic points, and the induration may remain several months after the lesion. In old patients, extragenital chancres are more common than in adults. Some cases have been reported where grandchildren infected their grandparents with syphilis. It is often difficult to make a diagnosis of chancre of the face in the aged as it may have every appearance of epithelioma. In fact, several years ago, a man, aged sixty-five, consulted me for a sore of the right cheek, which had every appearance of epithelioma, but a diagnosis of chancre was made. I did not treat the local condition except with antiseptic washes and as the old man was anxious to have the sore removed, he consulted another physician, who made a diagnosis of cancer, advised operation, which was performed, but several weeks after, the condition proved to be syphilitic. It behooves us to use great care in treating sores of the aged; we must not overlook the possibility of syphilis and must not conclude that every sore an old patient has is epitheliomatous.

The secondary symptoms usually come three or four weeks after the initial lesion but may occur earlier. Horand reports a case where a pustulous eruption showed fifteen days after the appearance of the chancre. It is usually maculous or may be squamous, but always not marked and may be so light that it passes unnoticed (Pic and Bonnamour). It may last three or four weeks

and disappear, but will reappear, especially if the parts are exposed to the cold, even an exposure to the air may be sufficient to bring it on. Syphilitic papules may develop three or four months after the disappearance of the chancre. They are usually small and may spread all over the body. One of the diagnostic signs is the appearance of the eruption upon the palmar and plantar surfaces, while most skin diseases do not produce an eruption on these parts. The eruption is usually symmetrical and may disappear and recur frequently.

A man, aged sixty-three, consulted me for an eruption of the skin, which had the appearance of psoriasis. He denied having had syphilis, yet upon routine examination, an indurated spot was found on the penis. He had noticed a small sore, but had paid no attention to it; he admitted that he had been living with a woman, but felt sure that she could not have infected him. A diagnosis of syphilis was made since the Wassermann reaction was positive.

When the eruption appeared, the patient complained of a feeling of lassitude, muscular pains, headache, vertigo, loss of appetite and insomnia. He was extremely nervous and at times delirious at night. He gradually grew worse, prostration was extreme and cachexia pronounced, he became profoundly anemic and finally died from malignant syphilitic toxemia in spite of active treatment.

The toxins of syphilis are often of a malignant nature in the aged and may cause meningitis, or nephritis. Quinquaud notes a condition which he terms typhosyphilis, characterized by a state similar to that of typhoid fever or a picture of pernicious anemia. The general symptoms usually come with the secondary eruption and disappear as the cutaneous and mucous symptoms abate.

Almost invariably in old age, syphilis causes profound

anemia as well as severe nervous symptoms. Syphilitic iritis appears in about one-third of the cases and may last several months after the disappearance of the chancre. Fournier has observed that the ears are often affected; he had a case with suppurative otitis media.

Acute senile syphilitic nephritis may develop in the course of secondary syphilis and is usually a grave complication. The syphilitic toxins are apt to cause nephritis as those of scarlet fever in children. Again the aged often have a latent kidney disturbance which is aggravated by the syphilitic toxins. The renal filter is already impaired and uremia is easily brought on.

Senile heart disease will be aggravated by syphilis or syphilis may cause aortitis or myocarditis. Syphilitic heart disease is more common than it is supposed to be. Other complications which may be caused by senile syphilis are phimosis, paraphimosis, prostatic hypertrophy, cystitis and pyelitis. The poor condition of the teeth in senility predisposes to an aggravation of the lesions in the mouth.

Cerebral syphilis is often difficult to diagnose because in old age uremia will present the same clinical picture.

Gummata often undergo sarcomatous degeneration in the aged which leads to many difficulties both in diagnosis and treatment. I have seen several cases of epitheliomata that had been engrafted upon a syphilitic lesion and resisted all treatments with radium. It is difficult to make a diagnosis in those cases and we must depend a great deal upon the history of the case. Small epitheliomata of the skin in old age will usually yield to radium treatment but if they resist the radiations, syphilis should be suspected as a possible remote cause of the condition. The cantero-syphilitic combination may be observed in any part of the body.

The diagnosis of syphilis in old age is not always easy.

The Wassermann test, even of the spinal fluid, is not always to be depended upon in old patients; and it is essential to make an accurate diagnosis in order that early treatment may be given.

Syphilitic hepatitis is similar to the hypertrophic alcoholic type and difficult to diagnose, again, there may be a mixture of the two varieties. Its diagnosis, like that of syphilitic nephritis, can only be established by most careful observations and laboratory tests. Syphilitic nephritis may be engrafted upon ordinary senile nephritis and an amelioration of the syphilitic condition may not affect the disease of the kidneys, which was present before the syphilitic infection.

The prognosis of senile syphilis is very grave. Eventually, complications add to its seriousness, asthenia and cachexia are often fatal. The toxins of syphilis hasten senile degenerations in all organs and may cause death through senile nephritis, or severe inflammatory reactions in any organ.

The treatment must be as active as possible, but as the stomach of the aged patient cannot stand irritating remedies, we must resort to intravenous medication or subcutaneous injections of the soluble mercurial salts. We must always bear this in mind as elimination is very poor in the aged, we may get the secondary effects of the remedies used, which can be very annoying. Sometimes when specific remedies fail, we may obtain results in using remedies which are not ordinarily employed in the treatment of the disease.

Although in senility I have not seen many encouraging results due to salvarsan in chronic cases, it will often work well in acute cases. I have used Novarsenobillon, which is the dioxydiamidoarsenobenzolmonomethylene sulphonylate of soda, the salt described by Ehrlich under the name of "914." It is freely soluble and can be quickly used without complicated apparatus. In old

age, we must use the remedy with caution and it should not be employed if there is acute nephritis, icterus or cardiovascular affections. In senility it is well not to begin treatment with salvarsan or novarsenobillon until the acute symptoms have subsided. Early treatment with mercury is perhaps better unless the indications point to serious complications. An eighth of a grain of the yellow iodide of mercury given three times a day, gradually increasing the dose, will be advisable as soon as the diagnosis is made. Novarsenobillon can be used early if nephritis, icterus or cardiovascular diseases are of syphilitic origin.

In using novarsenobillon a safe rule would be to commence the treatment with 0.10 or 0.15 gm., and note whether there is a strong reaction. If there is no reaction, the second injection should be 0.2 gm. and if no untoward symptoms appear, the dose can then be progressively increased so as to gradually reach the normal dose of 0.015 gm. per kg. of weight (0.9 gm. in the case of a man or woman weighing 120 pounds.)

If there are signs of reaction after the first dose, we repeat the same dose instead of giving a larger one. Normally, there may be a reaction, but it is not severe; there may be headache, fever and lassitude for a short time. Intolerance would be manifested by an aggravation of the reactive phenomena, which is rare if the same dose is repeated over again. In some cases, a few minutes after the intravenous injection of novarsenobillon, the patient may experience an itching and burning around the anal region.

The treatment should be commenced with a small dose, with an interval of eight days between each injection. The day following the injection, an injection of gray oil, one grain, should be given in the buttocks.

The following course of treatment shows how it may be carried out:

Nov. 29, 1918	Novarsenobillon	0.10	gram
Nov. 30, 1918	Gray oil	0.065	"
Dec. 7, 1918	Novarsenobillon	0.15	"
8, "	Gray oil	0.065	"
15, "	Novarsenobillon	0.20	"
16, "	Gray oil	0.065	"
23, "	Novarsenobillon	0.30	"
24, "	Gray oil	0.065	"
Jan. 1, 1919	Novarsenobillon	0.45	"
2, "	Gray oil	0.065	"
9, "	Novarsenobillon	0.60	"
10, "	Gray oil	0.065	"
Feb. 9, "	Novarsenobillon	0.15	"
10, "	Gray oil	0.065	"
17, "	Novarsenobillon	0.30	"
18, "	Gray oil	0.065	"
25, "	Novarsenobillon	0.45	"
26, "	Gray oil	0.065	"
Mar. 4, "	Novarsenobillon	0.60	"
5, "	Gray oil	0.065	"
12, "	Novarsenobillon	0.80	"
13, "	Gray oil	0.065	"
20, "	Novarsenobillon	0.90	"
21, "	Gray oil	0.065	"

This ends the second course of treatment and if the case is progressing satisfactorily, two months after a third course can be given as the preceding, of six injections of novarsenobillon and of gray oil.

After the third course of treatment, I have used the yellow iodide of mercury by mouth for several weeks, increasing the dose until there was pain in the umbilical region, slight salivation or painful condition of the teeth. If there is gastric intolerance, sajodin, the moniodobehenate of calcium may be given, eight grains three times a day. Sometimes, when other remedies fail, arsenic trioxide, $\frac{1}{100}$ gr. every 3 hours, may be given, or Fowler's solution prescribed. The bowels must be kept open, which will offset many symptoms due to the secondary effects of drugs as a result of cumulative action. Too much arsenic will produce symptoms similar to those of coryza and the lower lids will become puffed.

Novarsenobillon has been satisfactory when used with

caution. For a few hours after the injection the patient should remain in the recumbent position and his temperature by mouth and rectum should be taken every two hours. In some cases, the injections may give rise to marked symptoms of reaction, if those symptoms have disappeared by the eighth day, the dose may be repeated, but not increased. If, eight days after the second injection, there is evidence of reaction, it is advisable to give a smaller dose or postpone the date of the injection until the symptoms of reaction have subsided.

Iodide of potassium is effective in treatment, but must be administered with caution since it is irritating to the stomach and sometimes to the kidneys. Sajodin, eight grains every 3 hours or three times a day, is a substitute for the iodides and causes no gastrointestinal irritation.

In some cases I have seen extreme prostration and cachexia, the stomach was not able to stand strong remedies; in these cases, I gave four grains of sajodin every two hours and the following prescription:

R
Fluidextracti Cocae ℥ ss
Syrupi Chocolate q. s. a. d. ℥ iv
Sig: Teaspoonful in milk every two hours.

Cinnabar decoction, known as Zimmerman's decoction, will work well in many cases. I have seen patients who would not be benefited by the specific remedies of syphilis, yet would improve on two grains of lime phosphate and two grains of iron phosphate in tablet form, prescribed every two hours. Elixir calisaya or the elixir of iron, quinine and strychnine phosphates may work well.

Silver nitrate, 30 grains to the ounce of water, will heal the mucous patches in the mouth and a mouth wash of chloral hydrate, a 2 per cent solution, is an effective antiseptic. Because of the tendency of these local sores to become malignant, attention must be directed to the

local treatment in old age, it is more important than in maturity.

Alcohol, in the form of brandy or whiskey, is a valuable adjunct to the general treatment, if there is great prostration. Bromides should be given for insomnia and other nervous symptoms and they may be used to fortify the action of the iodides.

The cases of combined cancer and syphilis are difficult to treat. We must use antisiphilitic remedies, and should wait to see the results of specific treatment before operating, but they are seldom encouraging and may come to surgical intervention. Some patients do well after surgical treatment. It has been my experience that radium-therapy does not benefit a case of sarcoma or carcinoma which has been engrafted upon a syphilitic lesion.

CHAPTER XL

THE SENILE CLIMACTERIC: A TYPICAL CASE

The following case is typical of the state described as the senile climacteric.¹

A man, aged seventy-three, single, holding a political position involving some responsibility, but little actual work besides checking and countersigning reports, etc.; has held this position twelve years and formerly held a similar one in another department for ten years. The routine duties of his position can be performed by a subordinate and his absence would cause no disarrangement in his office.

He is religious, abstains from alcohol and tobacco and has always been a "stickler" in observing the proprieties of social life. He was formerly cheerful, but never communicative, had many acquaintances, few friends and no intimates. While tactful and pleasant he was strongwilled, short and decisive in argument, as in giving orders. He was exactingly methodical, neat in appearance and in surroundings, almost miserly economical, was at one time an officer in the army and preserved an erect, dignified bearing, reserved and reticent.

He had typhoid fever during the Civil War. Has had no serious illness since, but became morbidly depressed when his sister died and remained away from his office for a few weeks. This depression was gradually overcome and no change in his mental or physical condition was noticed until about six months ago, when it was noticed that he was not as regular in his habits as for-

¹ The Senile Climacteric, *New York Med. Jour.*, Dec. 2, 1911.

merly, neither as methodical nor as correct in his work. He was not careful about himself or his surroundings, his desk was littered with papers and scraps were thrown upon the floor instead of in the waste basket, clothes were thrown upon the chairs instead of being hung up, he preserved useless letters and papers, became peevish and complaining, forgetful, and occasionally dozed off at his desk. He now began to notice slight infirmities, aching in the ankles while walking, shortness of breath when going upstairs, palpitation of the heart when the door slammed or the head of the department approached his desk. He became occasionally dizzy, vertigo lasting but a moment. Noticing cloudiness in his urine when it had been standing overnight he consulted a physician who diagnosed chronic interstitial nephritis. He then worried about his physical condition and watched all sorts of somatic disturbances, frequently felt his pulse, looked at himself in the mirror to note any change in his appearance and made repeated visits to his physician. He felt that he was getting worse and changed physicians.

He still presented an erect bearing, but would occasionally permit himself to sink into a slouching attitude, with arms hanging loosely in front of him and a slight stoop. He was restless, apparently afraid of some unknown danger. The skin was slightly wrinkled, but soft and showing the extreme care he had always taken of it. Physical examination showed no marked degenerative changes.

The principal change was in his mentality.¹ Here I was obliged to depend mainly upon the statements of his friends and neighbors. He had formerly been very reticent, now he frequently asked them if they noticed any change in him. He sought their company and became talkative, his conversation being confined exclusively to

¹ Senile Mentality, Intern. Clinics. Vol. IV. Series 21.

his health and his work. He took no interest in any conversation which did not relate to himself. His conversation was rational and when he made mistakes in figures, names, places or dates acknowledged his mistakes when corrected.

The process of mental deterioration was rapid but irregular, he is now passing out of the climacteric period and entering the stage of senility with steadily increasing senile changes. During this climacteric period his memory weakened and he replaced forgotten facts by inventions, insisting upon their accuracy. These would be forgotten the next day and new fabrications substituted to them while the statements made the day before were denied. During this time a persecutory delusion developed. He began to worry about his position and thought that a certain subordinate might be selected to fill it. He conceived the pleasure of this subordinate and from this arose the idea that this subordinate was in some way responsible for his illness. Carrying this conception further, he believed that this man would have him sent to an asylum if he returned to work. When this stage was reached it was possible, by suggestion, to create hallucinations, for instance, that this subordinate had agents in his room to kidnap him, that men were watching him from behind a lamp post, etc. The persecutory delusion was sometimes forgotten, the hallucinations could only be evolved through suggestion when the delusion was present. He was loquacious when speaking of his own importance, but spoke cautiously and in evident fear of an imaginary danger. Only once did he speak voluntarily of it; at other times I was obliged to lead up to the subject. If I broached it at the beginning of our conversation he usually denied any such fear, but after a prolonged conversation, casual references to this substitute in his office would arouse the delusion.

He developed exalted ideas of his importance, exag-

gerating the value of his services, believing that his absence from his desk would seriously hamper the government. These were not, however, insane delusions such as those which appear in the parietic, but mere egotistical opinions. The fear that his absence would interfere with the routine of his office and that he would be discharged became a persistent phobia. This was the only mental aberration which was constantly present and remained unchanged until he returned to work a few days ago.

During this period the mental attitude was sometimes depressed, agitated or apathetic, rarely cheerful. There were occasionally lucid intervals lasting from several hours to a few days, during which he was cheered by letters from his superiors, assuring him that his position was safe. Yet even then he would suddenly become depressed, call up his superiors on the telephone for corroboration of their letters, and then doubt their sincerity. During the lucid intervals the patient's conversation was rational and he sometimes realized that he had said or done irrational things, but if conversation was prolonged it was possible by suggestion to arouse a persecutory delusion along the lines of the suggestion.

The usual mental attitude was agitated depression. In this state he sought listeners to whom he would explain how his absence from work hampered the government, and speak of his dread of being discharged, he would repeatedly ask if his listeners could detect any signs of insanity, and frequently sent for me insisting that I should examine his heart, blood pressure, urine, mental condition, etc. Several foolish infatuations following sexual recrudescence, added to his agitation and depression.¹

Sexual recrudescence has been frequently noticed in advanced age, there being sometimes a prolonged, more

¹ Medico-legal Relations of Old Age, *New York Med. Jour.*, May 25, 1912.

often paroxysmal libido, without functional potentia. It is in the paroxysmal form of recrudescence that an individual is driven by sexual fury, unrestrained by reason, to attempt rape, and a child being usually available the attempt is made upon the child. It is safe to say that most, if not every case of atrocious but unsuccessful attempt at rape upon a young girl by an old man occurs as a result of sexual recrudescence during the senile climacteric. When the recrudescence is prolonged, the sexual stress is apparently not so great and the individual is more likely to become infatuated with one woman, than to attempt indiscriminate or forcible intercourse. Such infatuation may lead to a *mésalliance* and give rise later to medico-legal questions. In this case the main infatuation was apparently for a middle-aged woman, who told him that she was married and living with her husband, yet consented to meet him secretly. During his rational hours he realized the folly and the immorality of his relations although declaring that there had been no sexual relations. At other times he spoke for hours of her charms, virtues, etc., carried her picture, stood in front of the house in which he thought she lived, and met her by appointment. After some of these meetings, or perhaps while watching the house, he became absent-minded, wandered aimlessly and twice crossed the river unconsciously. At one meeting he lost his month's salary and thereafter she failed in her appointments. The fear of losing his position and his infatuation for the woman who failed him, kept him almost constantly depressed even when his mind was clear. A few weeks ago he heard that she was going to Europe and for several days went repeatedly to the house in which he supposed she lived but failed to see her. He was extremely agitated on the sailing day, kept her picture constantly before him, and said over and over again that he would never be able to see her again. A

few days later he had apparently forgotten his infatuation for her and when reminded of it, spoke of it as an insignificant episode of the past.

Now, six months after the initial manifestations of the senile climacteric, he is passing out of this period and reaching the somatic state of senility and the mental state of senile dementia. His appearance bears out the statement of his friends that he has aged ten years in six months. His bearing is less erect and when not watched he falls into a slouching attitude. He has lost weight, his face is wrinkled, his expression generally apathetic, occasionally anxious when he makes an effort to concentrate his mental faculties upon his condition. He is becoming careless about his person and surroundings except on Sundays when he goes visiting or expects visitors, he is more sluggish in his movements, there is an occasional tremulousness of the hands, his walk is slower and he makes shorter steps. The degenerative changes have been quite uniform.

During the climacteric there were maniacal outbursts, periods of depression and amentia, delusions, hallucinations, and phobias with lucid intervals. The mental aberrations gradually disappeared leaving a weakened mind, true dementia. He is pliant, so that a child can lead him away from his purpose. He is losing interest in the events of the day, in everything and everybody except himself. His infatuations are all but forgotten, and other recent events are but dim memories while he recalls episodes of his early life. The sexual recrudescence has subsided.

It is still possible to arouse persecutory delusion through frequent suggestion, but it is mild and quickly forgotten. His mental attitude is apathetic or depressed. He has been able to resume work because his age and his long association with his fellow-employees have secured for him concessions which virtually re-

lieve him from all active duties. What he does now is routine work requiring little mental effort. He is susceptible to flattery and keenly feels criticism though formerly indifferent to both. When questions involving reason and judgment arise, he makes an evident effort to concentrate his thoughts and still reasons rationally, but slowly. Continued effort causes mental confusion and brain fog. When speaking of himself his ideas are still exalted, he holds an exaggerated opinion of his importance and of his work, but there are no delusions. From a strong, aggressive personality he has become a passive, pliant nonentity.

The senile climacteric being one of the critical physiologic periods it cannot be prevented nor need anything be done if the mental and physical deteriorations proceed uniformly and no active or distressing manifestations appear. When such manifestations appear, as they did in this case, it is generally possible to relieve distressing symptoms. Psychic measures are sometimes effective, more often drugs must be used. The psychic measures to be employed depend upon the temperament of the individual and the particular form of aberration present. In this case the mental condition sometimes improved under flattery, praise or concessions, at other times criticism, censure, even threats were necessary to restrain, quiet or arouse him. Delusions could be developed through suggestion, but could not be dispelled that way. They were usually forgotten.

The treatment consisted of amorphous (red) phosphorus in two-grain doses three times a day given continuously for two months, chloral hydrate, bromide of potassium, and incidental remedies for constipation.

Bromide of potassium was given for a week when the sexual stress appeared to be most at its climax and the patient spent hours in front of the woman's house. During this time veronal was given as a hypnotic, at

other times chloral was used. I fortunately secured the patient's confidence through producing appreciable effects, catharsis, sleep and relief from pain. It was not difficult afterwards to induce him to take medicine when he thought he did not need it and would not take it from any one else.

He is continuing to take phosphorus and takes the chloral and potassium bromide at night when agitated or "nervous" as he calls it. Libido and potentia have disappeared and such psychic measures as the musical play and burlesque produce sensuous but not sensual impressions.

In this as in other similar cases, the most lasting mental stimulation without reaction was produced by appropriate recreations. The apathetic dement holding a fishing line is roused to action by the sudden tug at the other end of the line. A popular or an old familiar air, the musical play, the rhythmic ballet, fireworks, single novelties, as an air ship or ocean liner, simple sports as tennis, croquet, billiards, etc., which produce neither mental strain nor aural or visual confusion, are beneficial. Confusing sights as a ball, a race with many contestants, a circus, confusing sounds as the jangle of city noises and recreations which involve mental effort as chess, scientific card games, problem plays, etc., cause rapid brain fag and hasten brain exhaustion.¹ While this question of recreations applies more particularly to the period immediately following the senile climacteric when the mind can still interpret sensory impressions, it can be made to apply to the climacteric period. These measures are not very effective, however, if there is a persistent cause for mental confusion as there was in this case.

¹ From chapter on Hygiene "Diseases of Old Age," P. Blakiston's Son & Co., Philadelphia, by Nascher.

CHAPTER XLI

SEXUAL LIFE IN THE AGED

Senility in a man does not necessarily mean a loss of sexual power; contrary to what happens in women, where the function of reproduction disappears at the menopause, the man usually preserves his sexual power until an advanced age. In the female, the desire rapidly wanes after the menopause and her sexual life thereafter is usually confined to a passive submission to sexual congress, in which there is neither pleasure nor response. There are, however, many old couples who find pleasure in sexual intercourse until the ages of seventy-five or eighty.

If we believe what we read we find that Thomas Parr, who lived until the age of 152, was accused at the age of 102 of immoral behavior; he was tried and convicted. He married eighteen years later a widow who said that she could not notice any indication of old age. We are told that the Dane, Drakenberg, lived to the age of 146 and at the age of 111 married a woman of sixty. A shoemaker by the name of Glan was said to have died at the age of 114, leaving a wife (his third one), who did not complain of his lack of virility.

However, many old men who boast of their sexual strength find themselves in a nervous state and the frequent repetition of the act is certain to cause debility and degeneration. Increased sexual power may be the first sign of senile dementia.

Senility does not imply sterility. Many authors have noted the presence of spermatozoa in old men, although it is not the rule after the age of sixty. Duplay, Wagner,

Bebrou, Rayer have noted their presence in men very advanced in age. Duplay has found them as numerous in old men as in adults, in 37 out of 52 cases: Desnos in 50 per cent of cases; Dieu noted an absence in 61 per cent of cases and according to him this absence would be constant after eighty-six years of age. Demange has noted their existence in a man ninety-four years of age and Casper in a man of ninety-six. Metchnikoff in his "Studies of Human Nature" stated that men aged ninety-nine to one hundred and three had spermatozoa in large quantities.

History notes a certain number of cases of old men at a very advanced age who had children. Pic and Bonnamour have noted that in the ancient world, Cato was said to have had a son at eighty years of age; Massinissa at ninety; Lakanal, Marivaux, the English historian Dadwel, President Tyler had children after the age of seventy. Duplay noted a case of procreation at ninety-four. Dr. Defornelle, who died in 1809 at the age of one hundred and twenty, married at one hundred and two and had children. Foissac and Finot reported the history of Baron Baracivine de Ceyrelli, who died at one hundred and four, leaving his fourth wife pregnant from an eighth child. Joseph Surrington who died at Bergheim, Norway, at the age of one hundred and sixty, had several children of whom the oldest was one hundred and five and the youngest nine.

We often read of old men marrying girls of twenty or thirty and of men of eighty having children. As a general rule, men lose their reproductive powers at the age of sixty; perhaps there are cases where old men past that age have children with young women, but I always feel there is a strong possibility that another man may be the real father of the child.

Why some old men desire the company of young women is a difficult question to answer and I believe it is

decidedly detrimental for an old man to attempt to rejuvenate himself. On the other hand, it is difficult to see how a young woman can marry an old man. Surely in some cases it is merely a matter of money; in others, that of having a companion and a home; in some women, who are jealous, there may be a sense of security with an old man.

In Paris, I heard of an old professor in the medical college who was disliked by all the students for his harshness. Upon his marriage to a girl of twenty, the students made bets with one another that he would die in a month's time. He died suddenly of heart disease six weeks after his marriage and the students suggested erecting a statue to the young lady for having rid the medical school of such a pitiless professor.

It seems to be true that women age more rapidly than men and in many instances (especially when marriage rests upon a physical basis) a difference of a few years between man and wife is best; if the basis is spiritual or intellectual, age does not matter. However, the old man who marries a young woman will usually pay the penalty, for nothing tends to lower vitality like this and it may take several years from a man's life. In America, married couples are usually of about the same age and not infrequently the woman is older than the man. In France, a man is usually about ten years older than his wife and I believe this is more advisable since women usually seem to age more rapidly than men.

Normal sexual life in the aged, in couples who have been married for several years and where each had become accustomed to the other, is not harmful to either the man or woman, but the act should not be repeated too frequently. The activity of spermatozoa ordinarily ends at the approximate age of sixty, which would apparently indicate that sexual indulgence should be lessened at this time.

We strive to discover what Nature planned for us, but it is impossible as each individual is a law unto himself; we cannot make a rule that will apply to all. Again, marriage has different foundations in different persons, being based upon the physical, spiritual or intellectual side. The intellectual foundation is the strongest and nothing can destroy the happiness of such a union. On the contrary, the physical side is easily changed by certain conditions which may lead to difficulties in married life.

Bright's disease seems to increase sexual power in some old men. I have observed it in a few cases. One man, aged sixty-five, had a mistress and indulged frequently in sexual intercourse. It had a decidedly bad effect on his general health; finally, he contracted syphilis from her and died from syphilo-toxemia.

A man of sixty-five was unable to have satisfactory intercourse with his wife because she had an inoperable tumor of the uterus. He developed neurasthenia, as a result of this, and suffered from many indefinite pains. He lost his appetite and had insomnia. Neither medication nor electric treatment were of benefit to him. He finally consorted with a young woman and a few days afterward consulted me for frequent and painful urination and told me that there was a discharge at the urinary meatus. Careful examination by microscopic methods did not reveal gonorrhea, but it was impossible to convince him that he did not have the disease. On another occasion, he had intercourse with another young woman and informed me that he had contracted a chancre. Again, it was difficult to convince him that he did not have syphilis. He later sent his wife to me, seeking relief for her condition which being remedied would permit him to have sexual congress; but I was unable to help her in any way. On another occasion, he consulted me for what he called atrophy of the penis and

testicles, but examination did not reveal anything abnormal. He realized that his extreme nervous condition was due to lack of sexual gratification, but could not derive any pleasure from intercourse with women other than his wife because of fear of venereal disease. The condition continued to cause melancholia and he was later found dead in a stable where he had hanged himself. I had known him for several years, as well as his family, and there were no signs of nervousness or insanity in any of them.

CASE II.—A man of seventy-six still retains his sexual power and occasionally has intercourse. For the past year each time he has performed the act, he has been obliged to use a catheter for twenty-four hours after.

CASE III.—A man, aged eighty-two informed me that he did not lose the power to have satisfactory intercourse until the age of seventy-four.

CASE IV.—A man, aged seventy-three, suffering from senile nephritis, could perform the act of sexual intercourse until the age of sixty-eight. He told me that he could begin the act now, but lost the erection before the act was completed.

CASE V.—A man, aged sixty-five, married a woman of forty. A few weeks later he developed angina pectoris, the attacks became more frequent and he died within a year. Sexual intercourse invariably brought on an attack of angina pectoris.

CASE VI.—A man aged fifty-five had nephritis and a systolic blood pressure of 210. His wife was a strong and healthy young woman of thirty-seven. One evening upon being hastily summoned, I found him in a very weak condition, breathing with difficulty, with pulse rapid and weak, and there was a cold perspiration. He was suffering from pulmonary congestion. He had felt

very well a short time before, but while having sexual intercourse this attack came. A few days after, he had an attack of angina pectoris and during the week several followed. He remained very quiet and benzyl benzoate was prescribed. Sexual intercourse was prohibited and he gradually improved; he has not had an attack of angina pectoris for the past three months.

I have asked numerous old men about their sexual life and I have found that many of seventy or seventy-five are performing the act of coition occasionally. We must remember, however, that old men are apt to deceive us and prone to brag about their strength. As a rule, women at this age do not enjoy the act although there are exceptions.

Prof. Charles Green in his "Case Histories in Diseases of Women," stated that in his early professional life he performed an extensive plastic operation for uterine procidentia on a woman of seventy, whose husband was somewhat older; the vagina was greatly narrowed and barely admitted one finger; the result to the surgeon was very gratifying; but some days after the usual convalescence the husband appeared with the complaint that coitus was no longer possible, and the professor had the chagrin of being required to incise the posterior wall he had so effectually narrowed. He states: "This experience is thus given for two reasons: first, for the guidance of young surgeons who may be as ignorant as the writer was, in supposing that sexual life necessarily ceases soon after the climacteric; and secondly, to show that women at the menopause, overcome with depression by the thought of presumed loss of womanhood and womanly attractiveness, may safely be told some years may elapse before the connubial relationship passes into final abeyance."

The work of Dr. Armaingaud of Paris, is well known in France and has been somewhat similar to that of Dr.

Trudeau in America. I spent several moments with him in Paris when he was preparing an important contribution on "Love in Old Age," for the Academy of Medicine. Although past seventy-five years of age Dr. Armaingaud is most active and his contributions are very important. One is so valuable that I am translating it. It is entitled "Love in Old, discussed from the Medical and Social Standpoint," printed in the *Bulletin of the Academy of Medicine*, Paris, No. 21, May 27, 1919, and the translation runs as follows:

"I hope each of you will acknowledge that at the age when business men usually abandon their career, after having made a fortune, to rest and quietly enjoy life, these men, if they are in good health, have reached the maximum of their value, in so far as professional experience and life experience are concerned. It would, therefore, be most useful, from the business standpoint as well as from the family and personal standpoint, that these old men should live as long as possible, so as to impart the benefit of their disinterested experience to those who replace them in the careers which they are abandoning (those who, deprived of advice, would only acquire that experience at their own expense and tardily, could thus acquire it easily), to enable their families to take advantage, in the conduct of life, of all that years have taught them, and ultimately to give their fellow-citizens—as town counsellors, general counsellors, deputies, or mere citizens—advice and to impart to them the views they have developed through long intercourse with men. What an increase in wisdom and riches, human health could be benefited with if we could find a way to augment the number of these beautiful elders, who, over eighty years of age, remain healthy, high-spirited, wholesome in mind and body, and only die, as said Fontenelle of extreme old age, experiencing but a difficulty to live, not painful and free from ailments and diseases!

Well, gentlemen, it seems to me that physicians can contribute, to a certain extent, to such a result, since one of the causes of premature senility is due to unfortunate habits and mistakes, which, especially in cities, old men contract and make, and that physicians can effectively combat, since, as I will show you, I myself have had some success in that line.

"I have, during thirty-five years, practiced medicine in a very large city, and like many other physicians I was the friend and confidant of numerous families of patients who were mainly business men, tradesmen, or intellectuals. I preserved all their faculties, all their moral dignity, and, to a great extent, their physical strength, until a very advanced age.

"But those I will mention, who are all dead now, were exclusively business men. I have observed the facts which I will discuss in men who, more easily than others, become unoccupied and bored. This seldom happens amongst intellectual or professional men, especially physicians, who continue to practice until an advanced age. These men I will speak of were either inhabitants of the city, or natives of the neighboring communities and even states, as my appointment of college physician had gradually acquainted me professionally with a great number of families who came to visit the sick youths and took advantage of the opportunity to address themselves to me.

"Usually these men, whose ages ranged between sixty and sixty-nine years, were healthy and intelligent. I always regretted to observe that a year or two after their withdrawal from active life their spirits began to lower in a noticeable manner, their physical strength being equally impaired, and their disposition changed. Their wives often confided this latter point to me. Such old men, hence so charming, kindly, who so readily took their grandchildren in their laps and loved them

greatly, began to grow indifferent, often even sad and 'grumpy,' depressed and exacting toward the household, often came home at one in the morning, and if I did not guess it, the wives would tell me that they had mistresses usually between twenty and thirty-five years of age. Ever since my first year of practice, experience showed me that erotic excesses in men of sixty, sixty-five and seventy years of age played an important part in causes of apoplexy, cerebral congestion, softening, cardiac affections, and ultimately in the rapid weakening of intelligence and will-power. As soon as I had sufficiently numerous professional relations and friendly and amiable patients, as were easily found in the city I lived in, I resolved to follow up the study of this question, to which I was sufficiently prepared. When the first wife came to confide in me, I listened to her with an interest increased by the fact that I knew the senile love which had got hold of the husband's heart and senses; the object being a pretty girl of twenty-five, whom he treated most liberally, I had noticed that my patient was beginning to decay. I will not go into details and speak of the 38 cases, identical in kind, on which my comparative statistics bear, all I will say is that as my experience in this matter spread and completed itself, each day I learned how better to act in order to obtain the results I sought, i. e., to have my patient decide to leave his mistress. I will relate all these cases to the typical one, as they are all identical in essentials.

"Having decided with my patient's wife that she would send him to me as soon as he would feel slightly unwell, I soon succeeded, following the natural course of the medical cross-examination, to make him confess that he had a mistress, usually young. Speaking of our friendly relation, and the affectionate feelings that I entertained towards himself and his family, of the interest I took in his physical and mental health, I made a

true and attractive picture of the joy that reigns in a numerous family, where three generations lived side by side, where the grandfather, amiable, kind, debonair, knows how to fulfill in a dignified manner his rôle of patriarch, being through long years an incarnation of respected, dignified, elegant even, old age, useful and pleasant to all. I recalled the sudden death of one of his contemporaries and showed him that it was due, not indeed to old age, but to the excesses, either real, or comparative (the practice in itself being almost an excess after sixty years of age), adding that it is to old men especially that applies the dictum, 'post coitum omne animale triste.' I made use of my historical remembrances, and told him what happened to a certain number of great men, the greatest in the history of the world, who tardily gave themselves up to women. Far from trying to deceive him, I also spoke of the existence of some exceptional cases, comparatively rare, of men who in spite of those excesses continued a beautiful career, either political, military, civil, or literary. But saying that in most of the men who so acted, the intercourse with women weakened and belittled, I explained to him the physical results of acts too frequent which can often be traced up to a desire to be true to a whim, and I reminded him of the moral standards natural to a man who feels rightly, if he did not realize it himself, told him that the woman, in spite of his generosity, was not faithful to him. I also spoke of old men, chosen amongst his contemporaries, who were examples of wise old age, sober and chaste, and thus I succeeded, in a great number of cases, in inducing him to take this serious determination, to abandon his mistress absolutely and forever, and if some need, most often fictitious and the result of auto-suggestion, made itself felt, I advised him to satisfy it in a special house, so as not to think of it often.

“Out of 38 old men I only speak of those who were worth the care I gave them because they were, I repeat, well-preserved physically and morally at the time of their withdrawal from active life.

“Twelve could not give up their mistresses.

“Seven listened to my advice for a few years, then relapsed.

“Nineteen took my advice and followed it with consistency, never going back to their illegitimate companions. The first twelve, whose ages ranged between sixty-two and sixty-six years, averaged sixty-three, when according to the tables of the French companies (1878) which are used by the insurance companies of the ‘rentes viagères,’ they should have lived an average of fourteen years more, i. e., reach seventy-seven, died at an average of seventy-three, thus losing four years of life, one with a single exception reaching seventy-nine years of age; out of the seven who partially followed my advice, during a few years only, and whose ages ranged between sixty and sixty-nine years, averaged sixty-five, and who according to the insurance tables should have lived thirteen years more, consequently until seventy-eight, six died at the age of seventy-five (average) thus losing three years of life, with a single exception who reached eighty.

“Of the nineteen whose ages ran between sixty-three and sixty-nine, average sixty-six, three exceptions died at sixty-eight, seventy and seventy-two, but the sixteen remaining ones, who, according to the insurance tables should have died (average) twelve years later, i. e., at seventy-eight, lived, always striking an average, until eighty-six, thus gaining thirteen years of life on the first group and eleven on the second group.

“Such are the facts I observed, the results I obtained, needless to mention, the great moral satisfaction I derived from preparing and convincing my patients,

through energetic will-power and successful efforts of perseverance, satisfaction increased by the expressions of gratitude of the subjects themselves and their families, who thanked me warmly and blessed me for having so rapidly transformed vacillating elders, on the way to decadence, dissatisfied with themselves, into kindly old men, amiable, in high spirits, real patriarchs, in a word, making the happiness of families in whose midst I myself enjoyed seeing them.

“Let us not forget the physiological conclusion which emanates from these facts.

“Human life regulated by reason, instead of being dominated by passions and fictitious needs, is not, according to the laws of Nature, as short as it actually is.

“It is not the number of years, it is not normal senility, the inevitable decay of the organs which causes old men to die at sixty-five or even seventy years of age, and the Arab proverb, quoted by our colleague, Professor Lacassagne, in his most remarkable memoir on ‘Man toward the end of his life’ saying ‘the worst enemies of an old man are a good cook and a young wife,’ expresses with great accuracy a great truth.

“It is, in fact, a private instance of a general law demonstrated and developed by all true moralists, and more especially, and with great charm, by Montaigne, that we are the very cause of many of our misfortunes, and that it is true in a measure to say ‘Man does not die, but kills himself.’

“Nothing is more important, in order to avoid most of these inevitable misfortunes, than to be convinced of that great truth.

“I think, gentlemen, that these facts which are the result of an experience, I can almost say a professional experimentation, that I am proud to call fortunate, deserve to be brought to the knowledge of physicians. What I have done others can do, and so augment the

number of good and beautiful old men, whose life will be agreeably prolonged and usefully so, for our own good. The rate of *rentes viagères* for old men will perhaps be cut down by companies, fall from 15 per cent to 20 per cent, but the interest and value of human life will be notably increased. Allow me, gentlemen, in closing, to cite two historical facts, which, selected amongst those I quoted to my patients, uphold my conclusions. Julius Cæsar, the greatest captain of the world, great orator and writer, after some glorious victories, reaches (at fifty-six years of age) Egypt, to conquer it, and this conquest is so easy that after a short sojourn there, he has nothing to do but to go home, yet he forgets himself in the arms of the very young queen, Cleopatra, and long resists the entreaties of his generals, who press him to proceed towards Rome, menaced by invasions. Ambition for the first time is conquered by love, and he is about to lose the fruit of his victories and dishonor himself when his generals decide to tell him that if he does not choose to leave they will put to sea and save the country. So, compelled to leave Cleopatra, who had given birth to little Cæsarion, he returns to Rome and repulses the foe. Soon three triumphs are to be celebrated to honor his victories, but he thinks of bringing to Rome the beautiful queen, Cleopatra, to attend them. So, he gives her the most gorgeous abode in Rome, the villa Tibur, which belongs to him, forgets all cautiousness, and has a gold statue erected to her in the Temple of Venus. These extreme and unseemly favors bestowed on a stranger shocked the Roman sense of dignity, and roused such an anger against him that the historian Dion relates that the Roman matrons, senators' wives, stirred up their husbands until they contributed in the arming of Cassius and Brutus. But for this the crossing of the Rubicon would perhaps never have roused such indignation and such a doom as took away his life.

“As to Henry IV, at fifty-seven years of age, his senile and extravagant love for the young Charlotte de Montmorency, 16 years old, caused the most extraordinary events to pass, during which he completely ridiculed himself in the eyes, not only of his subjects, but of all the European courts. He even went so far as to have invented and denounced by his ministers, Villeroy, Sillery and Jeannin, a plot of Conde against the state, intending to force the Dutch to surrender that prince who had sought refuge in the low-countries with his wife who was pursued by the King. It made a mental wreck of him. He even went so far as to dress like a stable-lad in order to see Charlotte who had left the court to escape from him. The results of this mad adventure, so well related by Colonel Henrard, were that he was ready to wage war against all Europe when Ravallac, for his own good, and that of France killed him. ‘Never before or since in modern history,’ wrote Hanotaux, ‘had a great country seen its fate depend on the slightest whim of a senile lover.’ ”

I wish to emphasize Dr. Armaingaud’s statement that experience has shown him that erotic excesses in men of sixty, sixty-five, and seventy years of age played an important part in causes of apoplexy, cerebral congestion, softening, cardiac affections, angina pectoris, and ultimately in the rapid weakening of intelligence and will power. In my experience I have found this to be true in most cases and I believe sexual intercourse should be limited after the age of sixty.

CHAPTER XLII

RADIUM THERAPY IN SENILE CASES

The natural process of arterial degeneration, which impairs the blood supply of the skin, predisposes to the development of epithelioma in old age, especially if there is traumatism. Superficial cancer in the aged frequently develops from certain conditions which are termed precancerous dermatoses. For instance, simple keratosis, leukoplakia, cutaneous horns and senile warts often become malignant and in these cases we should endeavor properly to diagnose and treat the early conditions. Leukoplakia lingualis, often due to excessive use of tobacco or syphilis, frequently ulcerates and is the beginning of epithelioma of the tongue. In old age, many of these conditions are due to syphilis, but histologic examination often reveals cancer in combination with it.

We must not overlook the fact that in old age lowered resistance predisposes to infection, and many of these epitheliomas become infected with *Streptococcus pyogenes* or *Staphylococcus aureus* or *albus*. This secondary infection often has fatal results due to septicemia, extensive local suppuration, erysipelas, thrombosis, edema of the glottis or pneumonia. These infections may determine the rapidity of metastasis since they spread very rapidly by the lymphatics. The general health is always poor in such cases and we must endeavor to improve it. It is well to cure these secondary infections before commencing treatment, employing vaccines, and in staphylococcic infections pre-

scribing stannoxyl. At the same time stannoxyl liquid and ointment may be used locally.

It is absolutely necessary to make a biopsy in every case, since we are not able to diagnose it clinically, and because the treatment depends upon the type of cancer. We must determine whether radium, x-rays or surgery is to be employed. Although it is not advisable to injure any senile carcinoma, we may, under cocaine, remove a V-shaped piece of tissue for histologic examination and the treatment should be given as soon as possible after a diagnosis has been made. A histologic examination should be made in all cases of dermatoses that are classed as precancerous. The type of cancer also gives us the prognosis; sometimes two kinds of diseased tissue may appear in the same growth, for example, syphilis and epidermoid carcinoma may co-exist.

Precancerous Lesions

Senile warts, keratoses and cutaneous horns may exist for a long time before changing, but under the influence of traumatism may undergo an epitheliomatous transformation. In old age it is well to cure these conditions before they become malignant. An application during 24 hours with a flat apparatus containing four milligrams of radium element for each centimeter of surface to be treated, filtering the plaque with one millimeter of lead and one-half centimeter of gauze is often beneficial. The apparatus is kept in place by adhesive tape and removed at the end of 24 hours.

Epithelioma of the Skin

A woman, aged sixty-nine, had a neoplasm of the left cheek and histologic examination showed that it was a basal-celled epithelioma. Its diameter was one and one-half centimeters and its elevation above the surface of

the skin one centimeter. There was an area of induration around it and the surrounding tissues were inflamed. The crust was removed, the neoplasm cleansed with ether and an applicator containing ten milligrams of radium element was prepared as follows: The plaque was covered with 1 mm. of lead over which was 0.2 mm. of aluminum. Six millimeters of cork was placed over this with another piece of cork 3 mm. thick in which a place was cut exactly the size of the epithelioma. Thread was wrapped around this applicator which was then dipped in wax. The distance from the radium to the neoplasm was one centimeter.

This applicator was strapped on the face by adhesive tape, then a bandage was applied; it was left on the face constantly for 120 hours. This gave a dose of 1200 milligram hours, which multiplied by 0.00751 gave 9.01 millicuries destroyed in five days. In the surface applicators one-half of this is lost in the air; the actual dose was therefore 4.50 millicuries destroyed.

Two weeks after the treatment the epithelioma had entirely disappeared, leaving a raw surface which was entirely healed in another week. The indurated area also disappeared.

Basal-celled epithelioma may also be treated by a plaque containing four milligrams of radium element for each centimeter of surface to be treated, filtering by one-tenth millimeter of lead or six-tenths millimeter of aluminum. It is not necessary to eliminate the secondary rays of lead since the tissues of the neoplasm will arrest many of them. This apparatus may be left in place for 10 or 15 hours. This is the technic of Simone Laborde, and she notes that if there is an indurated base, or if it is difficult to protect the healthy tissues surrounding the growth, it is better to employ a filter of four-tenths or five-tenths millimeter of platinum.

In treating spino-celled epitheliomas it is necessary to

use a much stronger dose varying from 20 to 60 millicuries destroyed. From 100 to 150 milligrams of radium element distributed in several platinum needles of four-tenths millimeters in thickness should be used.



Fig. 22. Basal-cell carcinoma of left temple, of two months' duration.

These needles may be imbedded in gutta-percha and applied as a flat applicator for 24 to 60 hours. Many times, in spino-celled epithelioma, it is better to excise the neoplasm by surgical procedure, possibly using radium or x-rays preceding and following the operation.

Cancer of the Tongue

In the Institute of Radium, Paris, I was astonished to see the number of senile cases for treatment of cancer of

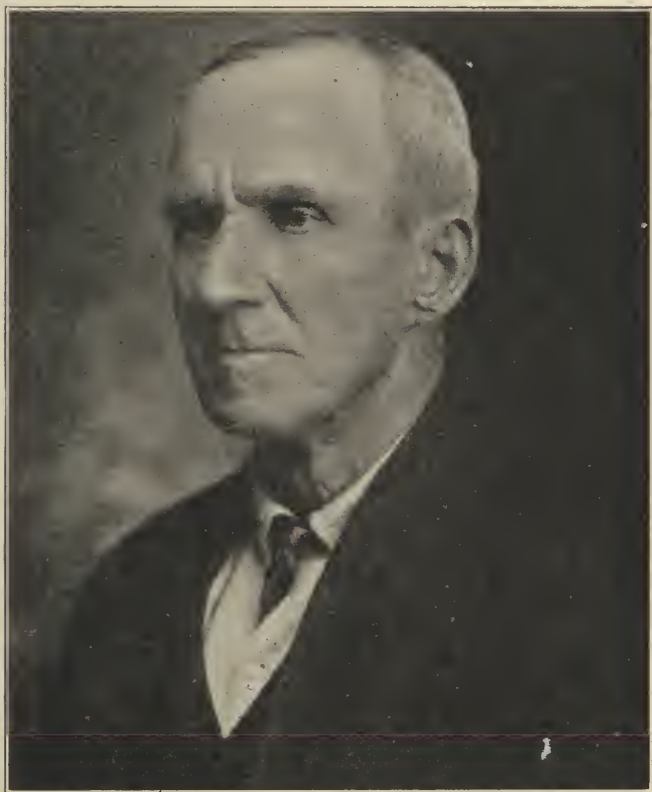


Fig. 23. Same patient as Fig. 22, taken four years after radium treatment, showing no trace of the disease.

the tongue, and I believe that Professor Regaud's work is one of the most important in the world. Professor Regaud has given a great deal of study to the treatment of cancer of the tongue and the results obtained by him are often remarkable.

Cancer of the tongue is frequent and very serious in

old age. It is often caused by excessive use of tobacco, defective teeth, or syphilis. The sharp edges of defective teeth cut the tongue and one of these cuts will eventually be the starting point of cancer; leukoplakia,



Fig. 24. Patient, aged 65, treated the same as patient in Fig. 22, for basal-cell carcinoma of the nose, showing complete healing four years after the application of radium.

frequently caused by tobacco smoking, is sometimes the beginning of epithelioma.

Leukoplakia lingualis should always be looked upon with suspicion and a histologic examination made. Often caused by syphilis, it does not respond to anti-syphilitic treatment. As pointed out by Professor Re-

gaud in the *Paris Medical*, April 2, 1921, *it is of no practical interest in cancer, to give treatment for syphilis. It is useless and much valuable time is lost, and it may even hasten the neoplastic process.* A good biopsy, made by a competent histologist, is all that is necessary and if cancer is present there is no need of a Wassermann test, treatment with mercury, arsenic or the iodides.

Failure to recognize the precancerous stages in old age may cause great harm. The pearly white thickening of the epithelium in leukoplakia should lead us to suspect cancer. Fournier stated that 30 per cent of cases of leukoplakia are followed by cancer and should be treated as malignant.

Regaud's treatment of cancer of the tongue is most remarkable. Depending upon the histologic examination, he usually employs needles containing emanation tubes of radium, but prefers needles containing sulphate of radium; the needles are made of platinum which has been fortified by iridium, the thickness of the walls being four-tenths millimeter. Radium puncture,—by means of needles inserted into the tongue,—enables one to completely sterilize the neoplasm by including all of the tumor, besides treating one to one and one-half centimeters of the area surrounding the epithelioma. The dose given is 20 to 30 millicuries destroyed of emanation of radium (this corresponds to 5000-6250 milligram hours of crystallized bromide of radium, and 2660-3330 milligram hours of radium metal), filtered by four-tenths millimeter of platinum. This dose of one millicurie destroyed for three to four cubic centimeters of tissue, with this filtration, will not dangerously affect normal tissues. Sometimes 15 needles are placed at regular intervals in surface and depth.

Regaud teaches that the intensity is a matter of great importance and his experience indicates that a feeble intensity is of the greatest value in treating cancer of the

tongue. He believes the best duration of irradiation to be about eight days. One hundred milligrams of radium in 10 hours gives the same dose as 10 milligrams for 100 hours but these different intensities give different results. He states that a certain case of epithelioma of the tongue was apparently cured by a dose of 10 millicuries of emanation of radium destroyed in eight days with one dose in five needles of radium puncture. It would have been aggravated, on the contrary, with a dose of 10 millicuries destroyed in one day by one or two punctures. A certain case of epithelioma of the neck of the uterus, not invading the surrounding tissues, was apparently cured with one dose of 20 millicuries of emanation destroyed in three days in one intracervical focus. It would probably not have been cured by the same doses administered in fractions in four weeks.¹

The needles used vary in length from five to 30 millimeters and are $\frac{1}{10}$ millimeter thick, and the emanation tubes of radium are placed in these needles, previously dipped in wax, which holds the tubes in the needles. The needles are then inserted into the tongue at a distance of about one centimeter from one another, care being taken to include the tissues outside the indurated area. These needles are then sewn into the mucosa of the tongue and the ends of the thread placed over the ear and held there by adhesive tape. The needles are left in place for eight days, then removed.

The adenopathy which usually follows is an important matter. In some cases several needles containing emanation of radium tubes are inserted into the glands at the same time the needles are placed in the tongue. In other instances it is advisable to remove the glands by surgery; sometimes radiotherapy will cure these enlarged glands. In a patient 80 years of age it is often imprac-

¹ Regaud, Cl.: *Radiotherapie des Cancers*. Report presented to the Fifth Congress of International Society of Surgery, Paris, July, 1920.

ticable to remove the glands by surgical means. In such cases we may try radium-puncture, or, x-rays may be of benefit.

It is preferable to use radium sulphate in the needles as the radiation is much more constant than with the emanation of radium tubes. Inserting the needles into the tongue can often be done under local anesthesia with cocaine or under general anesthesia with gas-oxygen.

One millicurie of emanation of radium destroyed is equivalent to 132 milligram hours with radium sulphate. The total amount of energy expended in milligram hours is for radium element and millicuries of emanation destroyed for the emanation tubes. *It is, however, convenient and possible in both cases to use the term "millicuries destroyed."* For example, an application of 20 hours with 100 milligrams of radium salts or with an equivalent quantity of emanation of radium can be expressed in average quantity:

One hundred milligrams of radium element for 20 hours.

One hundred millicuries for 20 hours.

We can say that the quantity of emanation of one milligram of radium element in one hour is equal to 0.00751 millicuries, the same quantity destroyed during the same time. This quantity would be for 100 milligrams in 20 hours (2000 milligram hours) $0.00751 \times 2000 = 15.02$ millicuries of emanation destroyed, and 100 millicuries during 20 hours corresponds to $0.00751 \times 2000 = 15.02$ millicuries of emanation destroyed. The intensity is obtained by dividing the total dose by the time, thus $15.02:20 = 0.751$ millicuries destroyed per hour. With a tube of radium this number expresses a constant intensity; with a tube of emanation of radium it expresses an average intensity.

The investigations of Prof. Regaud regarding inten-

sity are very valuable in radium therapy, and our success often depends upon the observance of this important fact.

Epithelioma of the Lips

This is usually a disease of elderly people and may be papillary or ulcerative and infiltrating in form. Secondary infection by the *Streptococcus pyogenes* often complicates the trouble. The majority of cases are spino-celled epithelioma and the small, superficial lesion which precedes this condition should be treated by small doses of radium in a flat applicator as a preventive measure. For the infiltrating type it is better to introduce into the mass small needles containing radium element or emanation tubes. The needles should be about 27 millimeters in length and four-tenths mm. thickness of platinum. From two to five needles are inserted into the mass, each one containing from 1.33 to 3 milligrams of radium element, giving a total dose of about 10 to 20 millicuries destroyed in eight days. The submental, submaxillary and deep cervical chain of glands may be treated by radium-puncture with the same kind of needles, or it is often possible to treat them afterward with x-rays.

Epithelioma of the Rectum

It is often possible to cure cancer of the rectum and in hopeless cases to relieve suffering. Dr. M. H. Cesbron, of Paris, sometimes employs platinum needles 5 c.m. in length, and three emanation tubes in each needle. Several short needles are also used, each one containing about 16 millicuries of emanation of radium. The dose is about 50 millicuries destroyed in 96 hours. Another method is to imbed platinum needles containing radium element, filtered by two-tenths mm. of aluminum, in

dental composition, which is placed into the rectum, removed each day and cleaned, giving the same dose as described above.

Cancer of the Uterus

Many inoperable cases in old age will be relieved by radium therapy. The emanation tubes covered with two-tenths mm. of aluminum may be placed in a blind catheter of pure rubber for intrauterine application and at the same time an emanation tube covered by two-tenths mm. of aluminum is inserted in a gold tube 2.5 mm. thick. The latter is then placed in a cork which has been cut for the purpose. This is to be applied to the cervix. For the parametrium an apparatus made of two corks between a wire spring is used, each cork containing the gold tube (with 15 per cent of platinum mixed with the gold) and the emanation of radium, or the salt of radium in a glass tube. In this way the parametrium is treated while the intrauterine and intracervical application is made. The whole apparatus is left in place for a period of four to eight days. For these treatments of long duration it is necessary to use great care in the filtration of the rays. It is possible, in many instances, to cure cancer of the uterus in senile cases, and in others life will be prolonged and suffering greatly diminished. Regaud's treatment of cancer of the uterus at the Institute of Radium, Paris, is most valuable.

Biologic Studies in Radium Therapy

The studies of Professor Regaud, assisted by Dr. Lacassagne, on the effect of radium on the tissues, may mark a great advance in radium therapy. The investigations are made to determine "why radium cures cancer," and at the laboratory of biology Professor

Regaud and his assistants are experimenting on animals and making studies in cancer of man.

Professor Regaud notes that cancerous cells are more sensitive to the gamma rays of radium than the healthy cells, yet we ignore the actual cause of this radio-sensibility. It is very likely physiochemical, or more precisely, electrochemical.

A cell is not equally sensitive to radium during all the periods of its development. Professor Regaud has studied the biologic problems connected with the use of this substance and has proved that the sensibility to radium is at its climax at the moment when the nucleus of the cell divides itself. This theoretical observation enables us to draw a practical conclusion. The applications of radium should if possible, be prolonged so that the cycle of evolution of the cells we must reach should include a division of the nucleus.

It is not enough to possess a substance whose radiations have a favorable action on malignant tumors, we must be able to spread its energy accurately throughout the cancerous mass and the external application only enables us to reach the surface of large tumors. Thanks to radium-puncture, we are now able to act upon the mass itself.

In giving one treatment of long duration, with feeble intensity, we will probably obtain better results than with massive doses given for a short time.

Radium therapy has a wide application in geriatrics, since cancer so often occurs in old age. Many old people, hitherto given a death warrant because of cancer, owe to radium therapy several years of life.

CHAPTER XLIII

SURGERY OF THE AGED

Surgical procedures in senile cases present many peculiarities which make the work more difficult and the prognosis graver than in earlier life. These peculiarities include constitutional changes (greater resistance to infection, when the individual is in fairly good condition, and considerably lowered resistance when the body is debilitated, more profound surgical shock, slower reaction from shock, slow and incomplete repair, deleterious after effects, etc.), and local changes (degenerations, atrophy, larger proportion of inorganic salts in bone making, bone more brittle, lessened power of repair, cardiac and respiratory degeneration, increasing danger from anesthesia, etc.).

Bearing in mind these factors which increase the difficulties of operation the surgeon is confronted by such questions as these: Is immediate operation necessary to save life? Will delay convert an operative condition into a nonoperative one? Is the condition one which is becoming rapidly worse so that a later operation under less favorable conditions will be inevitable? Does the benefit to be derived warrant the dangers attending operative procedure? Will nonsurgical measures afford temporary relief without increasing the dangers of operation later; do cosmetic or nonessential reasons for the operation warrant the dangers? After an operation is decided upon the method of procedure must be determined and here again there are vital questions which must be carefully considered. Can the patient stand prolonged anesthesia? Is a radical operation impera-

tive or will a minor operation afford prolonged relief? Shall it be a one-stage or a two- or three-stage operation? Where there are several methods of procedure, which presents the least difficulties, and promises the best clinical results?

In many cases where operation is advisable, but not imperative, the decision will depend upon the presence or absence of pathologic conditions common in the aged, such as diabetes, nephritis, cardiac or pulmonary disease, cerebral or nervous conditions and extreme debility. There can be no debating when noninterference will result in speedy death, but even in such cases measures should be taken to minimize the dangers of eventual complications due to the chronic disease. Diabetes, for example, is especially liable to cause coma, shock and infection. The danger of shock can be minimized by the use of morphine and atropine hypodermically immediately before operation, and whiskey and strychnine immediately afterwards. The anoci-association method of anesthesia minimizes surgical shock and should be used whenever possible. The great danger, in operations upon diabetic patients, is the development of coma and this is more likely to happen if ether is the anesthetic. The coma is believed to be due to rapid acidosis, and this can often be prevented by placing the patient upon alkaline treatment for a few days before operation, but in emergency cases in which delay would be fatal, the work should be done under local anesthesia, or nitrous oxide-oxygen anesthesia.

As a routine measure before operating on an aged patient an estimation of the quantity of sugar in the blood and the determination of the alveolar air carbon dioxide tension in acidosis, should be made by reliable tests. Many times the quantity of sugar in the blood will be increased but the urine may give no evidence of the condition. Before operating on a diabetic, treat-

ment should be given and the operation delayed until the blood sugar has been reduced. Normal blood contains from 0.06 per cent to 0.12 per cent sugar. Dr. Marriott's apparatus for the determination of alveolar air carbon dioxide tension shows that a normal tension varies from 45 down to 40 millimeters. Those running from 35 down to 30 millimeters indicate a mild degree of acidosis and when the tension is as low as 20 millimeters, the patient may be considered to be in imminent danger.

As a general anesthetic in senile cases ether is safer than chloroform, but it must be used cautiously in cases where there is diabetes, nephritis, atheroma or pulmonary disease. Chloroform is a cerebral, cardiac and respiratory depressant and it must therefore be avoided or employed cautiously where such depressing effects may be dangerous. The nitrous oxide-oxygen combination is a safe anesthetic in most senile cases. The A. C. E. mixture (alcohol 1 part, chloroform 2 parts, ether 3 parts) is occasionally used in senile cases, but possesses no advantages over chloroform or ether used alone. Local anesthesia is attended by small danger, but it is not applicable to major operations except when used by the Crile method of anoci-association. Ethyl chloride is of service only when the operation does not involve the deeper tissues; in one case the frozen area became gangrenous. Spinal anesthesia owing to its uncertain action, difficult technic and danger of innervation of the muscles of respiration, should not be employed. The principal operative dangers are shock, hemorrhage and infection. The danger of hemorrhage is slight if ordinary precautions are taken. Occasionally, a serious effusion about the site of the operation, due to the degeneration of the vessels, may be observed. This effusion is slowly reabsorbed.

The aged possess a strong immunity to infection and under the usual aseptic precautions, infection will occur

only if resistance is lowered through debility or disease. Septic infection in the aged is always a grave condition, but erysipelas on a surface lesion can usually be controlled without much difficulty. The great danger in surgical operations upon the aged is shock. Death from shock usually occurs during or immediately after the operation. In some cases there is apparent recovery for a few days, then sudden collapse occurs. In other cases there is mental and physical depression after operation and a slow progressive deterioration ending in death. To avoid shock the care of the mental state is as important as the care of the physical condition of the patient. The dread of an unfavorable outcome is depressing and the patient facing an operation in a state of dread is more liable to succumb to shock than the hopeful patient. Nascher has pointed out the depressing effect of the hospital ward where the patient is obliged to hear the groans and cries of patients and see the dead carried out of the ward. It is impossible to instill hope in such surroundings. Sad leave-taking by members of the family, the suggestion that the patient make his will, stories of other cases that turned out unfavorably, a doubtful attitude of the surgeon, a lengthy discussion of the case in the presence of the patient, all tend to instill fear of the outcome. Hope is the most powerful psychic stimulant known.

The improvement of the general condition depends naturally upon the existing physical condition. The robust, well-fed prostatic needs no building up before going to the operating table, while the emaciated, debilitated cancer patient should undergo intensive treatment to improve the physical condition. In the latter case forced feeding, with predigested or partly digested food if necessary, phosphorous and arsenic as tonics, and mild alcoholic stimulation should be employed. If the patient is nervous small doses of morphine should be

given for a day or two before the operation. The danger of morphine medication is its liability to produce respiratory paralysis and this is obviated by adding small doses of atropia. A dose of atropia, say $\frac{1}{150}$ grain, should always be given before chloroform or ether anesthesia if there is senile emphysema or myofibrosis or if morphine has been administered shortly before.

Various measures have been recommended to prevent shock during the operation or counteract it when it occurs. In the aged, shock is sometimes so great that sudden death occurs during the operation. When sudden death does happen it is not possible to say that it was due to shock or to cerebral, respiratory or cardiac paralysis brought on by the anesthetic. Occasionally, there will be signs of threatened collapse, as cold sweat on the forehead, ashy pallor, shallow respiration and a weak, slow pulse. Any one of these should serve as a warning. Cardiac, respiratory and cerebral paralysis usually give no premonitory signs and the first sign of their occurrence is the sudden cessation of respiration or of the pulse or else a convulsive stiffening of the body followed by complete relaxation in death. The convulsive seizure points to cerebral paralysis and the immediate paralysis of other vital centers. The cautious surgeon and anesthesiologist have at hand means and measures to overcome shock and threatened paralysis of the vital centers but there is no known method of preventing cerebral paralysis. When this occurs death follows in a few seconds.

The postoperative dangers can usually be met successfully but postoperative shock or collapse following hours or days after the operation, perhaps after a period of apparent convalescence, may occur in spite of every precaution. Just what this collapse is due to, is unknown. In one senile case sudden death occurred on the twelfth day after an emergency operation for strangulated hernia. The patient was making favorable prog-

ress, and the day before death he was permitted to sit up in bed. He was found dead a few minutes after he had gone to sleep. In a case of cancer of the rectum the patient rallied after the operation but the next day became weaker and two days later he died. A few hours before, he appeared brighter and more cheerful than at any time since the operation, made plans for the future and seemed to be on the road to recovery. The collapse occurred while he was talking to the nurse. Apparent improvement followed by collapse is not unusual in senile cases which rallied after grave operations.

Secondary hemorrhage rarely occurs in senile cases, and under modern aseptic precautions infection is also rare. Uremia is another of the postoperative dangers and can be neither foreseen, prevented, nor cured. It usually sets in with a persistent serous diarrhea but some cases give no premonitory symptoms before the final convulsions or coma preceding death. The quantity of urine is lessened and there is a diminution in the amount of urea excreted. Diuretics may increase the amount of urine, but they will not increase the total amount of urea and there is no known method by which the output of urea can be increased. A slowly progressive uremia generally ends in coma and a rapidly progressive uremia ends in convulsions. Large doses of bromides given as soon as the first slight twitchings appear may prevent the more active convulsions but will not prevent the final outcome. Chloroform inhalations have been employed to relieve the severe convulsions, possibly hastening death. Postoperative pneumonia, usually bronchopneumonia, is especially liable to occur if there is a pulmonary disease complicating the surgical condition, and ether was used as the anesthetic. It may be due to the intense irritation produced by the anesthetic, but most cases are probably due to emboli causing infarction. Like uremia it can be neither foreseen nor

prevented, and death usually occurs in a few hours or days. There is no routine method of treatment, various measures having been employed in the few recorded recoveries. Hypostatic congestion is one of the few post-operative dangers which can be foreseen and should be prevented. The necessity of frequently changing the position of the patient in bed is so well understood that hypostatic congestion is not frequent.

The most common conditions in which operation is necessary are prostatic disease and hernia in the male, and cancer and gallstones in the female. Senile gangrene, calculus, intestinal obstruction, fractures and cataract also occur frequently in the aged. In addition to these conditions requiring major operations there are many minor pathologic conditions which necessitate surgical interference. Varicose veins, chronic ulcers, hemorrhoids and bed sores all claim the surgeon's attention. Traumatic conditions, except fractures, are rare in the aged, and appendicitis, perhaps the most frequent surgical condition in the young, is rare in advanced life.

It is not possible to offer suggestions as to the advisable procedures when there are several methods, each having its advocates and opponents. In prostatectomy for example, there are some surgeons who prefer the two-stage operation, some who cleave to the perineal operation, some who employ only the suprapubic method. Statistics are not always reliable. The only safe rule is to let the surgeon select the method which will give a minimum of shock and postoperative dangers. "Age is no bar to surgical operations." But age implies complicating factors which make operations more difficult and more dangerous than in earlier life. Not the age of the patient but those complications must be considered when deciding upon the advisability of an operation. In every case where palliative measures will give relief

and promise little or no shortening of life such measures should be employed in preference to grave major operations.

One of the most difficult problems in senility is to select the proper anesthetic, and if we possessed a satisfactory method of anesthesia, our mortality rate would be greatly reduced. I have used the nitrous-oxide-oxygen narcosis for the aged with good results, and have always felt that if certain improvements could be made on the apparatus we could perform many major operations with it.

Doctor F. A. Bardwell of Boston has devised an apparatus, combining several methods for administering nitrous-oxide-oxygen, in which he has eliminated the bulky stand, making the attachments on any straight back chair by means of a strap. A Bennett bag is attached near the inhaler, instead of two or three feet from the cone. The oxygen tank is connected to the inhaler and not to the bag, so that he can administer it at once if necessary without mixing it with the nitrous-oxide. As there is no pressure on the Bennett bag from the flow of gas into it, it is possible for the patient to rebreath into the bag without a loss of gas, as occurs in the ordinary apparatus.

There is a frame within the inhaler which is covered by gauze and an opening in the top of the cone through which ether can be poured upon the gauze if necessary. By a telescopic arrangement the bag can be detached from the cone, so that the inhaler can be used for ether narcosis.

Doctor Bardwell has found that a small amount of ether, for example, a dram or two, will give the desired amount of relaxation, and at any time, if there is rigidity of the muscles, this small amount of ether will give a result satisfactory to the surgeon. In this way it is possible to operate upon strangulated hernia or in fact

to perform almost any major operation. Doctor Bardwell obtained good results and his method of administering nitrous-oxide-oxygen apparently overcomes certain obstacles, which makes it an ideal anesthetic for the aged, in almost every instance.

Novocaine with suprarenin is a safe and satisfactory local anesthetic for the aged, and is employed in a weak solution, but a large amount of it is required. It may be used for strangulated hernia or operations upon the testicle, in combination with the nitrous-oxide-oxygen narcosis, thereby preventing surgical shock. In a woman, aged eighty-two, who had an extensive burn on the arm, I applied a solution of novocaine to the raw surface before the dressing, which made the latter painless. When novocaine is combined with suprarenin the effect lasts about three hours. Alypin is a satisfactory local anesthetic in some cases. Many surgeons apply alypin to the urethra before performing cystoscopy.

Strangulation of a hernia is very common in the aged. The operation can be performed with nitrous-oxide-oxygen anesthesia and very little ether, or under a local anesthetic. Cocaine is a dangerous local anesthetic in the aged and novocaine should be used in its place.

The removal of a carcinoma of the gastrointestinal tract in the aged is not often possible, if the operation reveals an obstruction, an abdominal "anus" becomes necessary. This is horrible and in most cases death would be preferable. In some cases of cancer of the stomach a gastroenterostomy has been performed with excellent results. One of my patients, aged seventy, had a carcinoma of the stomach, with complete obstruction. Gastroenterostomy was performed and the patient is now living in comfort, a year after the operation.

Roentgenology assists us a great deal in determining the condition and also what surgical procedures will be necessary. By this method many carcinomata will be

discovered in their incipiency. Gastric and duodenal ulcers are not common in the aged and when they are present they may undergo carcinomatous degeneration. By means of the Roentgen ray it is possible to diagnose a pathologic gall bladder with or without stones, and also to detect the presence of renal stones. If there are gallstones which are causing symptoms, cholecystotomy may be the best procedure. Many cases of gallstones will be confused with cancer of the liver, and a diagnosis will be difficult. Courvoisier's law is that deep jaundice associated with palpable enlargement of the gall bladder means carcinoma; without distention of the gall bladder it usually means stone.

Adenoma or carcinoma of the prostate may cause complete obstruction, and immediate operation becomes necessary. Even in some cases of this kind a large metal catheter, if held for sometime, especially with nitrous-oxide-oxygen-ether narcosis to the point of relaxation, may relieve the urinary obstruction. A large, flexible metal catheter will sometimes work successfully when other methods fail. If operation becomes a necessity, it is possible to perform it with nitrous oxide anesthesia, employing oxygen with it. A dram or two of ether with it will give the desired degree of relaxation. Suprapubic cystotomy may be performed under local anesthesia if other methods are contraindicated.

From my chapter on Senile Gangrene it may be inferred that it is not always necessary to hastily decide on amputation in senile gangrene. In many instances expectant treatment is justified, free drainage may be made and a wet dressing applied. In many cases of gangrene of the toes if we wait several weeks before operating upon the patient, the results will be better. While the disease is in the active stage operation often hastens death. One thing is certain, it is a very grave condition and we are justified in taking a chance, waiting to see how far

Nature will go in protecting the patient. It is surprising to see what Nature will do in many cases; the great trouble is, we are too ambitious and do not give her a chance. My case of senile gangrene is undoubtedly an exception, but the patient made an excellent recovery without surgery. It is advisable in our expectant treatment, however, to be prepared at any moment for amputation if the occasion demands it. If the patient is a diabetic the outcome is usually fatal and we are justified in waiting until the active period has subsided before operating. If the nitrous-oxide-oxygen narcosis is employed the result may be more encouraging. If the cellulitis is extending, operation should be performed as quickly as possible.

Blood sugar examinations have done a great deal in enabling surgeons to cope with senile diabetes. The patient can be given treatment and by following the blood sugar it is possible to know when it is safe to operate.

In some cases carbuncles will be cured without surgical procedures by multiple injections of an antiseptic solution containing phenolic ethers, and an autogenous vaccine. Tablets or hypodermic injections of stannoxyl often work well in these conditions. Stannoxyl works particularly well in staphylococci infections. However, free incision is advisable, and a cross-incision covering the entire diameter of the carbuncle should be made.

An aged lady, seventy-five, fell and had a fracture of the neck of the femur. This was reduced and no treatment by means of extension apparatus was given. Two months after she was in a chair, a few weeks later she was able to take a few steps with the aid of crutches. The outcome of the fracture was not satisfactory but she is able to walk a little. A lady, aged seventy-four, had a fracture of the neck of the femur. I gave more attention to the fracture than to her general condition. She was tortured by the painful extension apparatus with weights and the pain caused by the treatment had to

be relieved by opiates. She died at the end of the second week.

These experiences led me to believe that in many cases where we aim at an excellent reduction of the fracture, the patient dies, while if the fracture is not treated vigorously, and all the attention is concentrated on the general health, we may get an excellent result physically and a bad result where the fracture is concerned. Open operation is not always advisable in the aged, and immobilizing with plaster does not yield encouraging results. If the patient is of unusual physique, it may be possible to perform open operation (either nailing or bone drilling) but in most cases we must be content to keep him in a good physical condition even though we fail to enable him to walk. Attention should be directed principally to the general health, the patient should have a massage and be moved as much as possible in bed. It becomes necessary in time to force him out of bed, and in most cases it is very painful at first. Later it becomes easier for him to get into a chair, he can move a little without intense pain.

Senile epitheliomata are frequently operated upon and the results in many cases are very encouraging. However, a great many of these so-called "rodent ulcers" are in the temporal region and inoperable. Again, the operation is oftentimes of a mutilating nature. In my experience, radium therapy has succeeded in the healing of senile epitheliomata to the extent of making operation unnecessary in most cases. Often the patient fails rapidly and the epithelioma spreads after a surgical procedure. Cancer of the tongue and larynx will yield to radium therapy better than to surgical interference in most cases. Although radium does not act as well on mucous surfaces as on the skin, the results in the mouth and throat are encouraging provided large doses are employed.

Doctor Joseph Bissell (*The International Journal of Surgery*, May, 1919) reported the case of a professional man who had a rapidly growing epithelioma of the larynx. The malignant growth recurred after each operation, his general condition became rapidly worse, and he was sent back to his home in a distant city to die. About ten or eleven months afterward he returned to New York, stout, ruddy and a healthy looking individual. He said that he was going back to resume his business, having been cured by localized radium applications. He had employed large doses, first using a tube containing fifty milligrams of radium element placed in his larynx for two hours, and also had block applications of large doses of radium to the outside of his throat. At one time as much as 961 milligrams had been used on him for twenty hours. This case was an apparent cure of cancer by the local use of radium.

Of great importance, a fact recognized by Doctor Robert T. Morris, that we cannot keep senile cases in bed after surgical operations. In some cases it is advisable to get the aged patient out of bed the day following the operation, even though it was a major operation. Appendicitis is rare in the aged, but when present the senile patient should be in a chair the next day. This rule applies to almost every operation upon the aged. Senile patients will not do well in bed, and often a patient who is failing rapidly will improve almost immediately when he is allowed to get into a chair. They believe they will recover if we allow them to get out of bed.

It may not seem rational to allow them out of bed the day after an operation, but in dealing with the aged we must make allowances we would not make in dealing with younger individuals. All senile patients fail rapidly while in bed, therefore I have made a keynote in geriatrics to "Keep Senile Cases out of Bed."

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